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RESIDENTS OF ALBERTA'S LONG TERM CARE FACILITIES:

A DESCRIPTIVE PROFILE

LONG TERM CARE BRANCH
ALBERTA HEALTH, 1991

RESIDENTS IN ALBERTA'S
LONG TERM CARE FACILITIES:
A DESCRIPTIVE PROFILE

September 1991

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EXECUTIVE SUMMARY

Beginning in 1988 and annually thereafter, a province-wide resident classification process has been carried out in all long term care facilities in Alberta for the purpose of determining the case-mix of each facility as portrayed by the nursing care requirements of its residents. The database generated by the Alberta Resident Classification System for Long Term Care Facilities is a valuable health care planning resource. A descriptive profile of the residents of Alberta's long term care facilities has been developed from this database to provide a foundation for current and future program planning.

The report begins with an outline of the development and use of Alberta's Resident Classification system and the methods of analysis used for the report. The analysis and discussion is guided by a series of questions. These questions, followed by highlights from the analysis, are presented below.

1. **What are the predominant characteristics of the resident population currently being served in long term care facilities?**

    - The 'typical' long term care facility resident is female, older than 75, and widowed, divorced or separated.

    - English is the language preferred by 76% of residents.

    - The most common diagnostic categories are circulatory diseases and psychological disorders. The two most frequent specific diagnoses are osteoarthritis and dementia.

    - Residents 65 years of age and older have an average of 4.6 diagnoses compared to an average of only 3.5 medical diagnoses for residents younger than 65.

    - The average number of prescribed medications has decreased since the first year of classification from 4.7 to 4.2 per resident per day.

    - A very small percentage of long term care facility residents are currently receiving therapeutic interventions such as wound care or oxygen therapy.

The classification process collects information on the care requirements of each resident.

- The majority of residents require at least some assistance with the activities of daily living (eating, toileting, transferring and dressing).
- Seventy-seven percent of residents require at least general observation to prevent behaviour which is potentially injurious to themselves or other residents, and 76% require at least occasional intervention because they are having difficulty coping with routine or daily living situations.
- Sixty-six percent of residents require care for urinary incontinence, and 46% require care for bowel incontinence.
- Sixty-one percent of long term care facility residents receive assistance from family members (such as help with the activities of daily living) more frequently than once a week.
- A small number of residents do not have a family member involved in their care: the family members of 664 residents (5.2%) neither require nor provide assistance.

The high correlation between family members providing and requiring assistance suggests that family members of some residents are heavily involved in their relative's care.

2. **What are the characteristics of the long term care residents who require the least care?**

Residents with the lowest care requirements are defined as those classified at categories A and B.

- These residents account for 25% of the total long term care facility resident population.
- Men account for a higher proportion of this group of residents than for residents with higher care requirements.
- Residents in this group have more prescribed medications than residents with higher care requirements.

Two percent of the total long term care resident population have no documented care requirements on the eight classification indicators. The required therapeutic interventions and most common medical diagnoses for this group are presented, but further information is required before an adequate understanding of these residents can be reached.

3. **What are the characteristics of the long term care residents who require the most care?**

Residents with the highest care requirements are defined as those classified at categories F and G.

- These residents account for 36% of the total long term care facility resident population.

- A diagnosis of dementia or Alzheimer's disease is more common for this group of residents than for residents with fewer care requirements.

- These residents are also slightly younger than residents with lower care requirements, and have fewer than the average number of prescribed medications.

4. **What identifiable sub-groups are now being served by long term care facilities?**

Three sub-groups of residents are discussed in this report: the frail elderly, the cognitively impaired, and the young handicapped.

Frail elderly residents are defined, for the purposes of this report, as all residents over the age of 65 who do not have a diagnosis of mental retardation or dementia. This category is the largest of the three sub-groups and represents the typical or average long term care facility resident.

- Fifty-three percent of the resident population are frail elderly.

- A higher percentage of frail elderly residents (45%) are in the lighter care categories (A, B and C) than is true for other residents (27%).

- The majority of frail elderly residents fall into the older age groups.

- The average age of this group is 83.7 years.

Cognitively impaired residents include all residents with a diagnosis of mental retardation or any form of dementia[1]. This population group was particularly relevant to this analysis, because recent estimates[2] indicate that the proportion of cognitively impaired residents will increase in the future.

- Forty percent of the long term care resident population are cognitively impaired using this definition.
- The majority of cognitively impaired residents require heavier than average care.
- A larger proportion of cognitively impaired residents are between the ages of 75 and 84 (36%) compared to the overall population distribution (33%).

Additional analysis of the specific recorded behaviours requiring care and the ICD-9-CM diagnosis of psychological problems is also presented.

The young handicapped population was defined, for the purposes of this report, as all residents under the age of 65. While this group is not homogeneous, it is nevertheless useful to consider the overall care requirements of residents younger than 65 in comparison with those of residents older than 65.

- Approximately 9% of the resident population are younger than 65.
- The most common medical diagnosis for these residents is multiple sclerosis.
- A higher proportion of young handicapped residents are classified at the heavier care categories than other residents.

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[1] Included here are presenile, senile, multi-infarct, and arteriosclerotic dementias, Chronic Organic Brain Syndrome, Korsakoff's psychosis and Alzheimer's disease.

[2] Evans, D., Funkenstein, H., Alberta, M., Scherr, P., Cook, N., Chown, M., Hebert, L., Hennekens, C., Taylor, J., 1989. Prevalence of Alzheimer's Disease in a Community Population of Older Persons: Higher Than Previously Reported, Journal of the American Medical Association, 262(18):2551-2562.

5. **What patterns can be discerned from an examination of the population of long term care residents by classification categories?**

The resident classification categories were further analyzed to determine if any patterns were discernable.

- A comparison of the number of residents in each category in 1989 with 1990 indicated that the proportion of residents in the lower categories (A and B) decreased with a corresponding increase in the proportion of residents in higher categories (categories C, D, E and G).

- Seventy-three percent of the residents classified in 1989 remained in the same facility and were classified again in 1990.

- Nineteen percent of the residents classified in 1989 had died prior to the 1990 classification.

6. **Are there significant differences between residents in rural and urban settings?**

- The age distribution of the resident population in rural and urban facilities is similar, but rural facilities have a smaller proportion of residents between the ages of 19 and 74 and a larger proportion of residents older than 85 years.

- The average age of residents is higher in rural facilities (82.4 years) than urban facilities (80.0 years).

- A comparison of the proportion of residents in each classification category in rural facilities with the proportion in urban facilities indicates that there are no statistically significant differences between rural and urban facilities in the amount of nursing care required. Rural facilities have approximately the same proportion of residents in each classification category as do urban facilities.

There are some differences between rural and urban facilities in the proportion of residents receiving therapeutic interventions.

- Urban facilities have more residents receiving an intra-muscular injection than rural facilities, and a higher percentage receiving gastrostomy feeding.

- Rural facilities have a higher percentage of residents receiving a subcutaneous injection, oxygen therapy and wound care.

Rural facilities house 32% of the total long term care facility resident population, but there are differences in the proportions of residents in the three sub-groups discussed.

- Rural facilities have a slightly higher proportion of frail elderly residents than urban facilities. Thirty-four percent of frail elderly residents are located in rural facilities. However, the frail elderly represent more than half (57%) of the rural long term care facility population. A slightly smaller proportion (52%) of residents of urban long term care facilities are frail elderly residents.

- Rural facilities have an equal proportion of cognitively impaired residents and other residents. Thirty-one percent of cognitively impaired residents are located in rural facilities; an almost equal percentage of other residents (32%) reside in rural facilities. Urban facilities also have similar proportions of cognitively impaired and other residents.

- A smaller proportion of residents who scored zero on all eight classification indicators reside in rural facilities than other residents. Twenty-three percent of these residents reside in rural facilities, while 32% of all other residents reside in rural facilities.

- Most residents with a head injury (77% or 82 people) currently reside in urban facilities. Only 24 residents (23%) with a diagnosis of head injury reside in rural facilities. The majority of comatose (79%) and terminally ill clients (74%) reside in urban facilities.

7. Can any emerging populations for long term care be identified and described at the present time?

Groups of residents which may become more significant within the overall population of long term care facilities have been termed ‘emerging populations’ for the purposes of this project. The significance of an emerging population is determined by analyzing trends over time. Two emerging sub-groups are examined in this analysis. They are individuals with a brain injury and those who might be assumed to have unusually high care requirements when compared with most other long term care facility residents. While it is possible to identify the brain injured by diagnosis, the potentially ‘high need’ client is more difficult to identify. The therapeutic interventions indicators and the medical conditions of 'terminally ill' and 'comatose' were used to define the potentially 'high need' clients for the purposes of this report.

- Residents diagnosed with a head injury represent only a small proportion of the long term care facility population (.8%). Sixty-three percent of these residents are classified at either F or G. The majority of these residents are younger than 65.

- Comatose and terminally ill residents currently account for less than 2% of the total population, but most of these residents are classified as having heavy care requirements.

The scope of this project did not provide for an in-depth exploration of groups which have been identified as potential populations for long term care facilities. However, other populations have been identified in the literature as potential candidates for facility-based long term health care. Two such populations for whom epidemiological data is beginning to become available are briefly discussed. These are infants born with Down's Syndrome who may be likely to develop Alzheimer's disease in later life, and people with the human immunodeficiency virus or AIDS.

Other sub-groups identifiable by a combination of social characteristics and health needs may be distinguished more precisely in the future. Groups of individuals having a particular ethnic or cultural identity including Alberta's aboriginal people may also be emerging long term care populations. It has been suggested that long term care facility candidates currently described as 'difficult to place' may also constitute such a group. More specific studies will be needed to identify which groups are perceived to be emerging long term care populations, and why this is the case. It will be important to identify what services they require, and to establish responsibility for providing these services.

Summary

This project was initiated to provide an objective analysis of the characteristics of residents of Alberta's long term care facilities within the context of a Program Planning model. The analysis reveals that while the residents of Alberta's long term care facilities may be described as a "typical" long term care facility population, they are not a homogeneous group. Differences between the characteristics of residents requiring the most and the least amount of care and differences in the characteristics of the frail elderly, cognitively impaired and young handicapped residents highlight the need for additional study. The differences in resident characteristics between rural and urban long term care facilities also require further analysis.

Describing the characteristics of the current and potential residents for long term care facilities provides a basis for confirming needs, identifying developmental priorities, establishing program objectives and evaluating program outcomes. The analysis presented in this paper represents an initial step in this process.

INTRODUCTION

The proportion of the population over the age of 65 is lower in Alberta than any of the other Canadian provinces. However, this age group is rapidly expanding due to a number of factors, including advances in public health, new health technologies and healthier life-styles. An estimated 220,600 people over the age of 65 (representing 9% of the total population) lived in Alberta in 1990[3]. Women account for 57% of the population older than 65 years, and 66% of the population older than 85 years. By the year 2001, the proportion of the population over the age of 65 is expected to increase to 10% (or 323,600 people) and by the year 2016, an estimated 13.5% of the population of Alberta (or 478,900 people) will be over the age of 65[4].

In 1990, approximately 5% (11,690 people) of those over 65 years of age, and 29% (5,769 people) of those over the age of 85 lived in a long term health care facility in Alberta. As of March 31, 1991, Alberta had 93 nursing homes, with a total of 8,064 beds, and 80 auxiliary hospitals (including six small units in acute care hospitals), with a total of 5,438 beds. If a similar proportion are assumed to require long term facility health care in the future (5% of those over the age of 65), we can expect 16,180 people over the age of 65 will require this type of care by the year 2001, and 23,945 people older than 65 by the year 2016.

Beginning in 1988 and annually thereafter, a province-wide resident classification process has been carried out in all long term care facilities in Alberta for the purpose of determining the case-mix of each facility as portrayed by the nursing care requirements of its residents. The database generated by the Alberta Resident Classification System for Long Term Care Facilities[5] is a valuable health care planning resource. A descriptive profile of the residents of Alberta's long term care facilities has been developed from this database to provide a foundation for current and future program planning.

CONTEXT AND RATIONALE FOR THE STUDY

The development of Alberta's Resident Classification System for Long Term Care Facilities began in January 1986. This project was one of several major initiatives undertaken in Alberta's long term care system as a result of recommendations made in 1982 by the Alberta Nursing Home Review Panel. This Panel carried out a comprehensive review of nursing homes in Alberta, and two of its priority recommendations were the implementation of a patient classification system for funding long term care facilities, and the integration of nursing home and auxiliary hospital levels of care.

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[3] Alberta Bureau of Statistics, 1991. Alberta Population Growth, Second Quarter, 1990, Alberta Treasury.

[4] Alberta Bureau of Statistics, 1988. Population Projections, Alberta 1987-2016, Alberta Treasury.

[5] Formerly called the Alberta Patient Classification System for Long Term Care Facilities.

The Nursing Home Review Panel recommendations were reiterated in the 1988 "Mirosh" report, "A New Vision for Long Term Care - Meeting the Need". The 1989 implementation of a new funding system for long term care facilities based on resident care requirements as determined through classification results was the first major step towards the integration of nursing homes and auxiliary hospitals into one long term care facility system in Alberta.

In 1988, Alberta Hospitals and Medical Care created the Long Term Care Branch[6]. The Long Term Care Branch was given the responsibility to undertake strategic planning for Alberta's long term care facility sector. Its mandate was to develop, implement, monitor, and review resident programs and standards, funding policies, and program initiatives for long term care facilities in the province. The branch was also given the specific mandate to implement the recommendations of the Mirosh report.

An Operational Plan for Long Term Care and Geriatric Programs was first released by the Long Term Care Branch in 1989, and updated in subsequent years. The plan documented the initiatives being undertaken in response to the Mirosh Report in public health, mental health, home care, acute care, and long term care facility programs.

Consultation with health care stakeholders is an important element in health care planning. A Long Term Care Liaison Committee with representation from long term care and other health care sectors and professional associations was formed in 1989 to facilitate communication with a broad range of stakeholder groups. Formal consultation mechanisms were also established with health care providers to provide advice as the resident classification and case mix funding systems were developed and implemented. These groups were the Patient Classification Consultation Group and the Long Term Care Integration Committee.

Acting on the advice and recommendations of the Integration Committee, the Long Term Care Branch initiated a project in 1991 to define the Mandate, Boundaries and Framework for Facility-Based Long Term Care in Alberta. A planning model (see Figure 1) and three project deliverables were agreed upon. These were:

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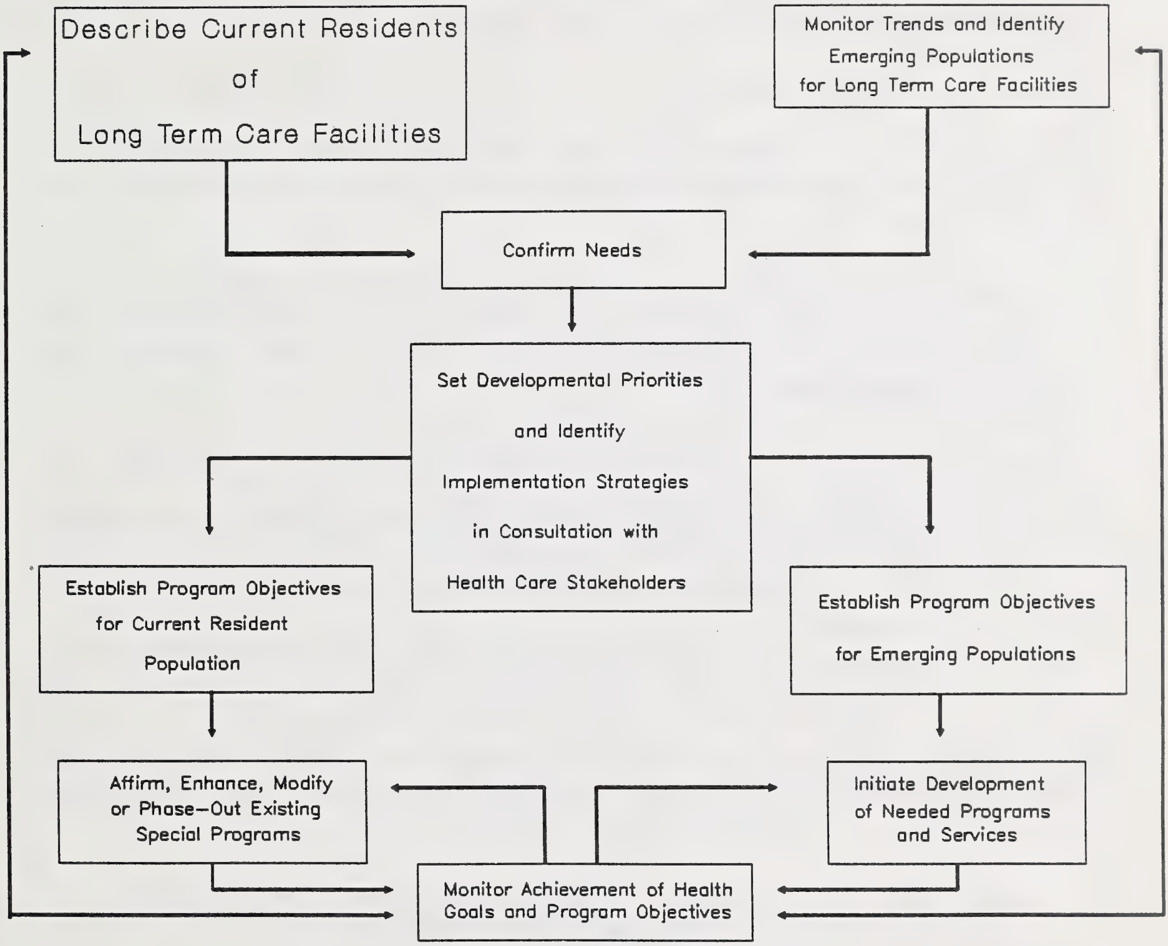
[6] Formerly the Long Term Care Institutions Branch.

Figure 1 PROGRAM PLANNING MODEL

PROGRAM PLANNING MODEL


Describe Current Residents of Long Term Care Facilities
Monitor Trends and Identify Emerging Populations for Long Term Care Facilities
Confirm Needs
Set Developmental Priorities and Identify Implementation Strategies in Consultation with Health Care Stakeholders
Establish Program Objectives for Current Resident Population
Establish Program Objectives for Emerging Populations
Affirm, Enhance, Modify or Phase-Out Existing Special Programs
Initiate Development of Needed Programs and Services
Monitor Achievement of Health Goals and Program Objectives

Long Term Care Branch
Alberta Health, 1991

1) Preparation of a background paper describing the characteristics of the current residents of Alberta's long term care facilities.

2) A discussion paper proposing objectives and program elements for all long term care facilities in Alberta.

3) A discussion paper proposing principles and a framework for the development of special geriatric and long term care programs.

These activities are proceeding within a broader context in which the Government of Alberta and the Minister of Health have emphasized the need for increased accountability within the public sector. Accountability is defined in the Mission and Role Statement for Alberta Health as a key strategic direction for the Department. This document states:

> "Provision of a health system which is appropriate and affordable hinges on accountability at all levels. Health programs and services delivered or funded by Alberta Health should contribute towards the improved health of Albertans. This will be achieved by:
>
> - planning for health services based on identified needs, goals and outcomes;
> - enhancing health information that will assist in monitoring and evaluating the health system;
> - increasing provider responsibility and accountability in managing resources;
> - facilitating consumer choice and responsibility in health resource utilization."

Alberta Health defines accountability as "answering for accepted responsibility" and "doing the right thing right". It is conceptualized as having three interrelated phases. These are:

- **specification**: an articulation of goals, expectations regarding process and outcomes expected, activities, resources and timelines;
- **measurement and reporting**: involves a variety of mechanisms for comparing program, organizational and individual performance to expectations, assessing the appropriateness and relevance of programs, services and systems (i.e. doing the right thing right), and interpreting and reporting results;

- **decision**: allows for informed judgement in regard to the implementation, continuance, modification or discontinuance of programs, services and systems and also consists of mechanisms for reward or sanction based on assessment of individual or collective performance.

The analysis of resident characteristics reported in this paper contributes to the implementation of the accountability strategy by presenting objective and empirically derived information about the clients of long term care facility services, so that their health needs can be validated and measurable program objectives established within a defined mandate.

The planning model adopted incorporates the principles of the accountability strategy. The initial activity in the cycle is describing the current residents of the long term care facilities - a process begun in this paper. A parallel and on-going activity is that of monitoring trends and identifying emerging populations - significant numbers or types of clients who may be placing new or additional demands upon long term care facilities. Once client characteristics are known, jurisdictional or sectoral responsibilities can be clarified and, if appropriate, program objectives can be established within the long term care system. After needs are confirmed, developmental priorities established, and implementation strategies explored with health care stakeholders, decisions can be made with regard to existing programs and/or to initiate new programs which may be needed. Over time, program monitoring through ongoing analysis of the Resident Classification database, special studies or other means can establish whether program objectives are contributing to the achievement of health goals, or whether they need to be reconsidered in response to changes in client characteristics.

In summary then, this paper reports data which will be used for a variety of purposes which are consistent with priorities identified by a consultation group of health care providers and the accountability strategy of Alberta Health. The data reported, and similar information collected in subsequent years, will facilitate planning for facility-based long term care based on identified needs, goals and outcomes, and will provide a benchmark for monitoring and evaluating program effectiveness over time.

STUDY QUESTIONS

The analysis of data was guided by the following questions:

1. What are the predominant characteristics of the resident population currently being served in long term care facilities?

2. What are the characteristics of the long term care residents who require the least care?

3. What are the characteristics of the long term care residents who require the most care?

4. What identifiable sub-groups are now being served by long term care facilities?

5. What patterns can presently be discerned from an examination of the population of long term care residents by classification categories?

6. Are there any significant differences between residents in rural and urban settings?

7. Can any emerging populations for long term care be identified and described at the present time?

METHODS

The Resident Classification System

The Alberta Resident Classification System for Long Term Care Facilities was developed to assist in determining the nursing care requirements of residents in long term care facilities (nursing homes and auxiliary hospitals) in the province. This information is used to allocate funding for nursing care services. The classification system can also be used for provincial, regional and facility planning, and in program development.

Origin and Development[7]

The development of Alberta's Resident Classification System for Long Term Care Facilities began in January 1986. Alberta Hospitals and Medical Care was responsible for managing the project with a study team from The Oregon Health Sciences University and the University of Alberta contracted to develop the system. The study team worked closely with a panel of clinical experts from the long term care field in Alberta in conceptualizing and testing the classification system.

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[7] This section taken from C. Schalm, 1989. The Alberta Patient Classification System for Long Term Care Facilities, Alberta Association on Gerontology Newsletter, August.

The aim in developing the classification system was to produce classification categories which grouped residents with similar types of care requirements and similar amounts of nursing care needs. A wide range of possible predictors of care requirements were tested in the initial draft of Alberta's Resident Classification Form (the data collection tool), including various medical diagnoses, activities of daily living (ADLs), behaviours of daily living (BDLs), medically determined ongoing care requirements, therapeutic interventions and programs, and family participation in care. By using a series of statistical analyses, care requirements described in the Resident Classification Form were linked to the amount of nursing time used by each individual resident to come up with predictors of the level of nursing care required. The reliability and validity of the tool was also tested at that time[8].

Medical diagnoses and treatments were not found to be good predictors of care requirements. It was found that an individual's functional abilities were more significant in determining overall nursing care requirements than were the medical diagnoses or the special therapeutic treatment being received. This represents a major area of difference between acute and long term care classification tools.

Eight indicators were found to predict variations in nursing resource use, and it is these eight items which determine an individual's classification category in the Alberta Resident Classification System. The indicators are derived from three care domains: Activities of Daily Living (ADL), Behaviours of Daily Living (BDL), and the Continuing Care Level (CCL), which is derived from medically determined ongoing care requirements. Each of these indicators measure the extent to which an individual requires assistance with or intervention for a particular activity, behaviour, or care requirement. The predictors are:

ADL	BDL	CCL
Eating	Ineffective Coping Behaviour	Urinary Continence
Toileting	Potential for Injury to Self or Others	Bowel Continence
Transferring		
Dressing		

A resident's score on each of the eight indicators is combined using a series of decision rules which then places the individual in one of seven classification categories. These categories, labelled A through G, are rank ordered from low to high in terms of care requirements and resource use. Weights were assigned to each category based on the differences between the nursing resources used by residents in the seven categories.

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[8] Semradek, J., Giovannetti, P., Hornbrook, M., McKenzie, D., Will, S., 1988. Alberta Patient Classification System for Long Term Care Facilities: Final Report.

When these weights are standardized, with category A having a weight of 1.0, then the resource use measures for the seven categories of care are:

A	1.00
B	1.40
C	1.93
D	2.26
E	2.90
F	3.40
G	5.18

This means that, for instance, a category B resident requires on average 1.4 times as much nursing care time as a category A resident on average, and a category G resident requires 5.18 times as much.

These weights are used in determining a case-mix index for each facility. A case-mix index is a measure of one facility's "heaviness of care" as compared to other long term care centres in the province. A case-mix index (CMI) is determined by comparing the proportion of residents in each classification category in one facility to the proportions for all of the province's long term care facilities. A CMI of 100 is the standard or average. A facility with a CMI of 125 requires 25% more resources than the average to provide for its residents' nursing care requirements, as compared to a facility with a CMI of 75, which requires 25% fewer resources than the average.

In addition to the eight classification indicators described above, the Resident Classification Form collects information about demographic characteristics, therapeutic interventions, the number of prescribed medications, documented diagnoses, and documented specific behaviours. Although these data do not influence the case mix index, they enable the analysis of trends in the long term care population over time in order to determine if new or revised policies and programs are required. Individual facilities are also able to use this information for their own planning purposes. This additional information also serves as a cross-check with the classification indicators to test the validity of the tool on a continuing basis.

Key Features

Patient classification case mix measurement systems have been used in acute care settings for a number of years. It is only recently that they have been applied to long term care settings. A report prepared in 1987 by consultants for the Government of Ontario ranked Alberta's system the highest in a review of existing patient classification tools for long term care[9].

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[9] Ministry of Senior Citizens Affairs, 1987. Review of Resident Classification Tools, Province of Ontario.

Some of the key features of Alberta's Resident Classification System are as follows:

- The focus of the tool is on resident care requirements, rather than services provided.
- Behavioral indicators of care are included in the determination of residents' classification categories.
- Practitioners were extensively involved throughout the developmental process for the classification tool.
- A combined empirical (research) and clinical approach was used in the development and validation of the classification categories.
- The validity and reliability of this system was established in the development phase, and inter-rater reliability testing continues during classifier training and the annual classification process.
- The tool was designed specifically to capture the care requirements of long term care residents, as opposed to being adapted from an acute care tool.
- The tool was tested on all long term care residents, including the young physically handicapped and cognitively impaired elderly.
- The system provides descriptive data about the entire population of residents in long term care facilities. This comprehensive data base can be used for program planning and evaluation within the long term care facility system and for strategic planning of the overall health care of chronically ill or disabled persons.

The Classification Process

A Resident Classification Form is completed annually for all residents of Alberta's long term care facilities. The classification is carried out by qualified classifiers who are registered nurses currently working in, or with experience working in, Alberta's long term care facilities, who have attended a four-day training session, and have attained a standard of at least 90% inter-rater reliability. To date, Alberta Health has contracted the management of the classification process to an external consulting firm. This firm hires and trains the classifiers. The classifiers spend eight to ten weeks completing Resident Classification Forms in facilities around the province. Classifiers do not classify residents in the facilities they work in themselves.

Inter-rater reliability testing is necessary to ensure that residents in all facilities would be classified at the same category regardless of which classifier completed the forms. Each year, several individuals are hired as inter-rater reliability testers. These individuals attend the same training workshop as the classifiers, but receive additional instruction about reliability testing. These individuals independently classify a random selection of residents already classified by the nurse classifiers. The eight classification indicator scores are compared to determine if the classifier's results correspond to those of the reliability tester's. If there is less than 90% agreement between the two, the results are discussed, and further classification forms are reviewed. Although it has not yet been necessary, if a classifier were to drop below the reliability standard, the classifier would receive further training, and the Resident Classification Forms he/she had completed would be reviewed and, if necessary, redone. While ongoing reliability testing is not undertaken in all jurisdictions elsewhere in North America, Alberta considers it be to an essential part of the classification process, since the data collected are used as the basis of funding nursing care services.

Residents admitted to the facility less than three weeks prior to classification are not classified. The panel of clinical experts in Alberta who developed the classification system, along with the study team from Oregon Health Sciences University, recommended this three-week period in order to ensure that a facility was not penalized because comprehensive interdisciplinary assessments of the resident, and an appropriate health care record and care plan had not yet been completed. Three weeks was also seen as a minimum amount of time for a new resident to adapt to the new living environment. Residents who are not classified because of this rule do not affect the facility's case-mix index. However, a facility receives funding for all of its residents, regardless of whether or not they were classified[10].

The information entered onto the Resident Classification Form is obtained from the resident's health care record. This includes the resident's care plan, medical record, nurses' notes, medication records, and so on. Some of the classification indicators are also verified with the nurse in charge of the resident's care, and/or occupational and physical therapists. Classifiers work in teams and exchange completed Resident Classification Forms at the end of each day to ensure they have not missed any items on the form. When classifiers complete a facility, the forms are forwarded to the consulting firm which conducts a further review for potential coding errors.

All data from the Resident Classification Forms are entered using a double-key method to ensure no errors are introduced at the data entry step. In addition, the forms undergo a computerized error detection process. This process flags any missing values, incorrect health care registration numbers, out of range values, etc. For example, the discovery of a 150 year-old resident would be investigated with great interest! All potential errors are investigated and corrected, and classification categories for each resident and case-mix indices for each facility are then calculated by the computer. Finally, reports containing a profile of the residents are sent to each facility.

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[10] A facility's funding level for nursing care services per resident day is established based on its case-mix index and then multiplied by the number of beds in the facility (based on an assumption of 99% occupancy).

The Analysis

The 1990 resident classification results were examined using the Statistical Package for the Social Sciences (SPSSx). Frequency distributions were calculated for all variables included in the database. Two tests of significance, Pearson's Correlation Coefficient and Chi^2 were used to test the significance of the relationship between those measures where the literature suggested a relationship might exist. The information presented is from a census of the population residing in all long term care facilities at the time of classification, rather than a sample. However, the classification data is considered to be a sample, because those residents who are admitted and then discharged between classifications, or those who are admitted during the classification period are not included. The population size is large enough that small differences in proportions produce statistically significant results.

For the purposes of this report, urban facilities are defined as facilities located in the major urban centres of Calgary (including Midnapore), greater Edmonton (including Fort Saskatchewan, St. Albert and Sherwood Park), Grande Prairie, Lethbridge, Medicine Hat, and Red Deer. All other facilities are described as rural.

The next section of this report contains the presentation of the Resident Classification data. The discussions interspersed throughout the analysis are intentionally brief. Some references to other studies are made, but an exhaustive review of epidemiological or other related literature was not undertaken within the scope of this project.

The seven questions outlined earlier led the analysis, and the presentation of the results also follows this format. The description of the predominant resident characteristics follows the format of the Resident Classification Form.

THE RESIDENT PROFILE[11]

DEMOGRAPHICS

The following information provides a demographic profile of the total long term care resident population. This profile presents a description of the 'typical' long term care resident living in Alberta's facilities. In 1990, a total of 12,832 individuals were classified in Alberta's long term care facilities.

Age and Gender

Figure 2 illustrates the age and gender distribution of the 1990 long term care facility population. The average age of the resident population is 81. The male population is younger than the female population - the average age for men (78) is lower than the average age for women (82). The majority of the residents (71%) are between the ages of 75 and 94. Young residents (those under 65 years of age) represent 9% of the total population.

Figure 2 AGE AND GENDER DISTRIBUTION OF RESIDENT POPULATION

		AGE CATEGORY							
GENDER		0-44	45-54	55-64	65-74	75-84	85-94	95 +	Total
Male	#	145	114	307	761	1441	1372	200	4340
	%	3.3	2.6	7.1	17.5	33.2	31.6	4.6	33.8
Female	#	132	139	305	938	2781	3521	676	8492
	%	1.6	1.6	3.6	11.0	32.7	41.5	8.0	66.2
Total	#	277	253	612	1699	4222	4893	876	12832
	%	2.2	2.0	4.8	13.2	32.9	38.1	6.8	100.0

The majority of the long term care facility population are female (66%). This proportion is high compared to the provincial distribution. According to the 1986 census, 49% of the Alberta population are female, with 56% of those over the age of 65 being female. The higher proportion of females in long term care facilities compared to either census group suggests that females are more likely than males to reside in long term care facilities.

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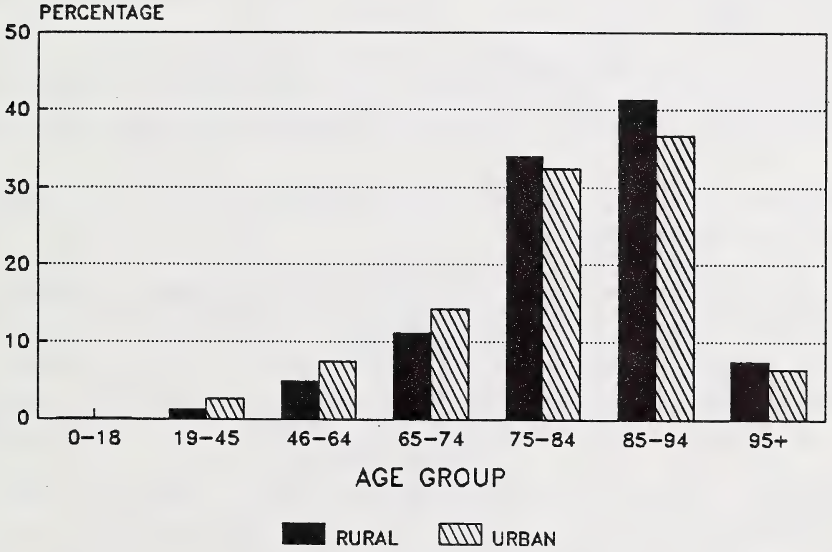
[11] Unless otherwise specified, all information discussed was collected during the 1990 Resident Classification process.

Rural - Urban Differences

The age distribution of the resident population in rural and urban facilities is similar (see Figure 3). Four of the six residents under the age of 18 reside in rural facilities. Rural facilities have a smaller proportion of residents than urban facilities in three age groups: 19 to 45, 46 to 64, and 65 to 74. The proportion of residents aged 75 to 84 is similar in both types of facilities. Rural facilities have a significantly higher proportion of residents aged 85 to 94, and a slightly higher proportion of residents over age 95[12].

Figure 3 AGE DISTRIBUTION - RURAL VS. URBAN FACILITIES



Current Marital Status

The majority of the residents of Alberta's long term care facilities are widowed, divorced or separated (63%), 23% are currently married, and 13% have never been married.

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[12] The differences in age distribution of rural and urban facilities were significant ($p<.01$) using a chi^2 test of significance.

Figure 4 compares the current marital status of female residents and male residents of long term care facilities with provincial estimates for marital status. Half of the female residents of long term care facilities (50.5%) are widowed or divorced, but only 13% of the male residents are widowed or divorced. Statistics Canada[13] estimates that only 7.3% of females and 3.3% of males in Alberta are widowed or divorced. Comparison of the widowed or divorced marital status categories with provincial estimates is problematic, due to different definitions of the information collected, but the differences still suggest that a very high proportion of long term care residents are widowed or divorced compared to the rest of the population of Alberta.

Figure 4 CURRENT MARITAL STATUS BY GENDER

MARITAL STATUS		LONG TERM CARE FACILITY RESIDENT	TOTAL PROVINCE
SINGLE	MALES	7.8%	15.5%
	FEMALES	5.5%	11.6%
MARRIED	MALES	13.1%	31.0%
	FEMALES	10.0%	31.4%
WIDOWED/DIVORCED	MALES	12.9%	3.3%
	FEMALES	50.5%	7.3%

Figure 5 compares the current marital status of residents over the age of 65 and residents under the age of 65 currently residing in a long term care facility in Alberta with provincial estimates. The proportion of residents never married is higher than the provincial estimate, particularly for residents over the age of 65. Eleven percent of long term care facility residents over the age of 65 were never married, while Statistics Canada estimates that only 5.7% of Albertans in this age group were never married. A similar relationship exists for residents younger than 65.

Figure 5 CURRENT MARITAL STATUS BY AGE GROUP

		MARRIED	NEVER MARRIED	WIDOWED DIVORCED SEPARATED*
LONG TERM CARE FACILITY RESIDENTS	< 65	28%	41%	31%
TOTAL PROVINCE		63%	30%	7%
LONG TERM CARE FACILITY RESIDENTS	> 65	23%	11%	67%
TOTAL PROVINCE		58%	6%	36%
LONG TERM CARE FACILITY RESIDENTS	TOTAL	23%	13%	63%
TOTAL PROVINCE		62%	27%	11%

* Provincial estimates do not include people who are separated.

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[13] Statistics Canada, 1990. Postcensal Annual Estimates of Population by Marital Status, Sex and Age for Canada, Provinces and Territories, June 1, 1990.

Forty-one percent of long term care facility residents in this age group were never married, high compared to the provincial estimate of 30%. Comparison of the other marital status categories with provincial estimates is not possible, due to different definitions of the information collected.

Preferred Language

Figure 6 identifies the major languages preferred by long term care residents. English is the language predominantly preferred, followed by Ukrainian, German and French in that order.

Figure 6 PREFERRED LANGUAGE

Language	#	%
English	9824	76.0%
Ukrainian	974	7.6%
German	599	4.7%
French	328	2.6%
Polish	163	1.3%
Chinese	141	1.1%
Other	803	6.2%

Three hundred and fifty-six long term care residents (2.8%) are unable to comprehend English due to a language barrier, and 885 residents (6.9%) are only partially able to understand English[14]. For 1433 residents (11%), language is a significant barrier to communication (table not shown).

Discussion

The demographic information offers a profile of the 'typical' long term care resident. Women who are older than 75, and widowed, divorced or separated make up the largest population group in Alberta's long term care facilities (44.6%). Although the proportion of women in this group is higher than the Alberta population projections would predict, the numbers are not surprising for several reasons: women tend to live longer, are therefore more likely to be widowed, and men are less likely to assume the role of caregiver.

The average life expectancy at birth for women in 1986 was 80.3 years, compared to an average of 73.2 years for men. In Alberta in 1988, a 65 year old man could expect to live 15.3 years longer, while a 65 year old woman could expect to live 20.1 years longer[15]. *Since more women survive into older age, it is predictable that the majority of the long term care resident population would be female and that the average age for women would be higher than the average age for men.*

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[14] Percentages do not add up to 100% due to rounding.

[15] Alberta Senior Citizens Secretariat, 1989. Older Albertans - 1988.

The shorter average lifespan for men also has an impact on the marital status of elderly women and therefore of Alberta's long term care facility residents: 81% of those people in Alberta who are widowed or divorced are women, and 80% of the long term care facility residents who are widowed, divorced or separated are women. Women account for the majority of the long term care facility resident population who are widowed, divorced or separated in all age groups.

A social support network is vital to maintain an individual with disabilities in the community. Women tend to adopt the role of caregiver much more readily than do men[16]*. When faced with difficult care for a disabled spouse, women are more likely to accept this role. A person with a poor informal support network must rely on a formal support system such as community home care services, meals-on-wheels and (depending upon the severity of the disability and the availability of services) long term care facility services.*

The Resident Classification process does not collect information on the ethnic origins of the resident, which is an important variable to consider for planning purposes. Residents who strongly identify with a particular cultural group may feel isolated or uncomfortable if cultural needs (such as appropriate diet or celebration of special days) are not recognized.

MEDICAL DIAGNOSES

ICD-9-CM Diagnostic Categories

The International Classification of Diseases - 9th Revision - Clinical Modification (ICD-9-CM) is a classification system originally developed by the World Health Organization. The purpose of the system was to ensure that consistent information could be gathered to produce valid morbidity and mortality statistics internationally. The ICD-9-CM system is used widely by the health services industry, in Alberta and internationally. For this reason, the developers of Alberta's Resident Classification System chose the ICD-9-CM coding system for recording the diagnoses from each resident's chart. Although the resident's diagnosis does not affect the classification category, the diagnosis is recorded during the classification process for the information it provides for purposes of planning. Multiple diagnoses are not always recorded on resident charts (particularly if the second or additional diagnosis will have little impact on the resident's care planning) and absolute numbers are therefore subject to some error.

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[16] Quinn-Musgrove, S. 1990. Extended-Care Giving: The Experience of Surviving Spouses. Journal of Women and Aging, 2(2)93:107.

Figure 7 presents the proportion of residents with diagnoses which fall into the five ICD-9-CM medical diagnostic categories most common among this population. On average, residents are diagnosed as having 4.4 disorders[17].

Figure 7 MOST COMMON MEDICAL DIAGNOSES BY ICD-9-CM DIAGNOSTIC CATEGORY

DIAGNOSTIC CATEGORY	%*
Circulatory Diseases	79%
Psychological Disorders	77%
Musculoskeletal Disability	68%
Neurological Motor Dysfunction	60%
Sensory Disorders	34%

* Percentages do not add to 100% since many residents are diagnosed with a variety of illnesses.

Seventy-nine percent of the residents in long term care facilities have a diagnosed circulatory disease and almost as many (77%) are diagnosed with some form of psychological disorder. Sixty-eight percent of the residents have a diagnosed musculoskeletal disability[18]. A diagnosis of some form of neurological motor dysfunction, including multiple sclerosis, Parkinson's disease and other similar diseases, was identified for 60% of the residents. Thirty-four percent of residents have a sensory disorder (e.g. poor vision, blindness, hearing loss) which has been documented on their chart as a medical diagnosis.

Discussion

Recent studies on heart health indicate that cardiovascular disease accounts for 40% of the deaths in Alberta each year.[19] *According to Howell*[20]*, cardiovascular disease is the most common cause of death in men over 40 and women over 65, and ischematic heart disease is responsible for more mortality and more serious morbidity than any other specific disease in Canada. He stresses that "the health behaviours involved [those responsible for increasing the risk of heart problems] are largely socially learned and culturally determined and supported."*

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[17] A list of the recorded medical diagnoses is included in Appendix A.

[18] The Resident Classification process does not collect information on the number of residents using wheelchairs, but a separate governmental study found that 8726 long term care facility residents were using wheelchairs in Alberta in 1989.

[19] Joffres, M., 1989. Cardiovascular Disease in Alberta: Mortality and Morbidity, Recommendations and Proposed Objectives for Heart Health Initiatives in Alberta, Alberta Health.

[20] Howell, J., 1989. Public Health Aspects of Heart Disease: The Scientific Basis for Action. Recommendations and Proposed Objectives for Heart Health Initiatives in Alberta, Alberta Health.

According to a recent study of the prevalence of psychiatric disorders in Edmonton[21]*, a total of 17% of the sample had experienced some form of psychiatric disorder (or symptoms which met diagnostic criteria) within the six months prior to the investigation. While the prevalence of such disorders is much higher in the long term care facility resident population, the study demonstrates that these disorders are not uncommon in the general population.*

Specific ICD-9-CM Diagnoses

Figure 8 MOST COMMON MEDICAL DIAGNOSES BY ICD-9-CM DIAGNOSIS

DIAGNOSIS	%*
Osteoarthritis	25.8%
Dementia**	23.2%
Cerebrovascular Accident	16.4%
Hypertension	15.0%
Diabetes Mellitus	14.8%
Heart Failure	14.4%
Depression	12.7%
Alzheimer's Disease	10.7%
C.O.P.D.	10.3%

* Percentages do not add to 100% since many residents are diagnosed with a variety of illnesses.
** Dementias include arteriosclerotic, presenile, senile and multi-infarct but not Alzheimer's because it is listed separately.

The nine most commonly occurring specific diagnoses are identified in Figure 8. Osteoarthritis is the most commonly occurring medical diagnosis, identified for 26% of the residents in Alberta's long term care population. Twenty-three percent of the residents have been diagnosed with dementia (including arteriosclerotic, presenile, senile and multi-infarct). If Alzheimer's disease (a diagnosis identified for 11% of the residents) was not separated out from the other types of dementia in the ICD-9-CM coding process, dementias would be the most commonly occurring medical diagnosis. Sixteen percent of long term care residents have a diagnosis of cerebrovascular accident, 15% have a diagnosis of hypertension and 15% have a diagnosis of diabetes mellitus. A diagnosis of heart failure was identified for 14% of the residents. Depression was diagnosed for 13%. Chronic obstructive pulmonary disease was diagnosed for an additional 10% of residents.

Diagnoses by Age Group

An examination of the most common medical diagnoses for specific age groups provides a more varied image of the long term care facility resident population (see Figure 9).

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[21] Bland, R.C., Newman, S.C., Orn, H. 1988. Epidemiology of Psychiatric Disorders in Edmonton, Acta Psychiatrica Scandinavica Supplementum, 338(77).

For those residents who are younger than age 65, the most common medical diagnosis is multiple sclerosis (22%). Approximately 13% of residents in this age group are diagnosed with epilepsy, 13% with depression, 12% with mental retardation, 12% with cerebrovascular accident and 11% with para- or quadriplegia. The average number of diagnoses for residents in this age group is 3.5, somewhat lower than the resident population as a whole.

Cerebrovascular accident ranks as the most common medical diagnosis (24%) for those residents between the ages of 65 and 74. Seventeen percent of residents in this age group are diagnosed with diabetes mellitus, 14% with Chronic Obstructive Pulmonary Disease, 13% with Alzheimer's disease, and 13% with other forms of dementia. Thirteen percent of residents in this age group are diagnosed with hypertension and 13% are diagnosed with osteoarthritis. Depression is diagnosed for 12% of the residents, alcoholism is diagnosed for 12%, and hemiplegia is diagnosed for 11% of the residents in this age group. The average number of diagnoses for residents between the ages of 65 and 74 is 4.1.

The majority of the long term care facility resident population (78%) fall into the oldest age groups (75-84 and 85+: see Figure 2). Although many diagnoses are commonly present among both of the oldest age groups, some differences between these groups exist. Osteoarthritis and dementia are the most common diagnoses for both of the oldest age groups. Twenty-five percent of residents between the ages of 75 and 84, and 34% of residents over the age of 85 are diagnosed with osteoarthritis. Twenty-four percent of residents between the ages of 75 and 84, and 30% of residents over the age of 85 are diagnosed with a dementia other than Alzheimer's. With the addition of Alzheimer's disease, the proportion of residents with a diagnosis of dementia increases to 40% for residents between the ages of 75 and 84, and 37% for residents over the age of 85.

Cerebrovascular accident is diagnosed for 20% of residents age 75-84, and for 13% of residents in the oldest age group. Diabetes also ranks among the top ten diagnoses in both of these age groups, accounting for 17% of residents between 75 and 84 years, and 13% of residents over age 85. Hypertension is present for approximately the same proportion for both age groups (15 - 18%). Heart failure is diagnosed for a greater proportion of residents over 85 (20%) than for residents between the ages of 75 to 84 (13%). Depression also ranks among the ten most common diagnoses for both age groups, although a higher percentage of residents between the ages of 75 to 84 have this diagnosis (15%) than those residents over the age of 85 (11%).

Alzheimer's disease, Parkinson's disease, and Chronic Obstructive Pulmonary Disease rank among the ten most common diagnoses for residents between the ages of 75 and 84, but not for residents over the age of 85. Alzheimer's disease is diagnosed for 15%, Chronic Obstructive Pulmonary Disease for 12%, and Parkinson's disease is diagnosed for 10% of residents between the ages of 75 and 84.

Atherosclerosis, blindness and hearing loss rank among the ten most common diagnoses for residents over the age of 85, but not for residents between the ages of 75 and 84. Atherosclerosis is diagnosed for 13% of residents over the age of 85, hearing loss in 16% and blindness in 12% of residents over age 85.

The average number of diagnoses for residents between the ages of 75 and 84 is 4.5, and residents over the age of 85 have an average of 4.6 diagnoses.

Figure 9 TEN MOST COMMON MEDICAL DIAGNOSES BY AGE CATEGORY

	DIAGNOSIS	CASES	%*
AGES 0 - 64	Multiple Sclerosis	247	21.62
	Epilepsy	144	12.96
	Depression	148	12.61
	Mental Retardation	139	12.17
	Cerebrovascular Accident, Late	135	11.82
	Paraplegia & Quadriplegia	126	11.03
	Diabetes Mellitus	106	9.28
	Hemiplegia	89	7.79
	Cerebral Palsy	85	7.44
	Schizophrenia	79	6.92
	Chronic Organic Brain Syndrome	76	6.65
AGES 65 - 74	Cerebrovascular Accident, Late	412	24.25
	Diabetes Mellitus	297	17.48
	Chronic Obstructive Pulmonary Disease	231	13.60
	Dementia	222	13.06
	Alzheimer's Disease	221	13.01
	Hypertension	220	12.95
	Osteoarthritis	216	12.71
	Depression	212	12.48
	Alcoholism, Chronic	200	11.77
	Hemiplegia	189	11.12
AGES 75 - 84	Osteoarthritis	1050	24.87
	Dementia	1024	24.25
	Cerebrovascular Accident, Late	827	19.59
	Hypertension, Essential	747	17.69
	Diabetes Mellitus	730	17.48
	Alzheimer's Disease	651	15.42
	Depression	630	14.92
	Heart Failure	542	12.84
	Chronic Obstructive Pulmonary Disease	512	12.13
	Parkinson's Disease	434	10.28
AGES 85+	Osteoarthritis	1988	34.46
	Dementia	1689	29.28
	Heart Failure	1159	20.09
	Hearing Loss	902	15.63
	Hypertension, Essential	871	15.10
	Diabetes Mellitus	758	13.14
	Cerebrovascular Accident, Late	755	13.09
	Atherosclerosis	753	13.05
	Blindness and Low Vision	665	11.53
	Depression	637	11.04

*Percentages do not add to 100% because residents may have more than one diagnosis.

Discussion

Although medical diagnoses were not found to be good predictors of a resident's care requirements, examination of the diagnoses provides an insight into the natural history of common diseases. While the proportion of people in the general population with a particular diagnosis are over-represented in the long term care facility population, further analysis may provide a valuable profile of the prevalence of diseases and diagnosed disabilities requiring long term facility care.

The number of diagnoses increases with age: older residents have an average of 4.6 diagnoses compared to an average of only 3.5 diagnoses for residents younger than 65. The majority of diagnoses fall into two diagnostic categories: circulatory diseases and psychological disorders. The two most common diagnoses are osteoarthritis and dementia.

ACTIVITIES OF DAILY LIVING

There are four indicators which measure the resident's level of required assistance with the activities of daily living (ADL's). These classification indicators are eating, toileting, transferring and dressing.

Figure 10 ACTIVITIES OF DAILY LIVING

ACTIVITY	AMOUNT OF ASSISTANCE REQUIRED	%
Eating	Independent	28.8%
	Some assistance	54.3%
	Complete assistance	15.6%
	N/A	1.3%
Toileting	Independent	31.5%
	Some assistance	37.1%
	Complete assistance	24.4%
	N/A	7.0%
Transferring	Independent	38.9%
	Some assistance	28.7%
	Complete assistance	31.9%
	N/A	0.4%
Dressing	Independent	13.3%
	Some assistance	34.1%
	Complete assistance	52.0%
	N/A	0.6%

A total of 16% of the residents in Alberta's long term care facilities require complete assistance with eating (see Figure 10), and an additional 54% of the residents require at least some assistance with eating. Twenty-four percent of residents require two people to assist with toileting, and an additional 37% of residents require some assistance. Thirty-two percent of residents do not require any assistance with toileting; a similar proportion (29%) do not require assistance with eating.

The term transferring refers to activities such as moving from a bed to a chair. Thirty-nine percent of the residents in Alberta's long term care facilities do not require assistance with transferring, 32% require two people to assist with transferring, and 29% require minimal assistance.

Thirteen percent of all long term care residents are able to dress themselves without assistance. Thirty-four percent require minimal supervision or assistance with dressing, and 52% require complete supervision or assistance, the highest percentage of all four ADL's.

Discussion

Caring for oneself, or at least performing the activities of daily living, enables the individual to maintain a sense of independence and dignity. The high proportion of long term care facility residents requiring assistance with the activities of daily living indicates that considerable effort is required by facility staff to assist the residents in maintaining a sense of self-efficacy. According to the Health Activity Limitation Survey conducted by Statistics Canada in 1986/87[22]*, 11.9% of Albertans require assistance with the activities of daily living and only 7.4% of those with a functional disability live in a long term care facility or special care housing. This small percentage of Alberta's population living in a long term care facility consists of people with either a significant disability, or those who lack a support network which could provide adequate assistance to enable the individual to remain in the community.*

BEHAVIOURS OF DAILY LIVING

Two measures of behaviour are fundamental to the calculation of the resident's classification category. The measures of coping ability and potential for injury reflect the number of residents requiring monitoring or intervention by nursing staff because they are experiencing difficulty coping with the environment or because they potentially pose a threat to themselves or to others.

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[22] Health Economics and Statistics, 1990. Disabled Population In Alberta: 1986 - 1987, Alberta Health.

Potentially Injurious Behaviour

Twenty-three percent of the residents exhibit no behaviour which could potentially cause an injury to themselves or others (see Figure 11). Various levels of intervention are recorded during the Resident Classification process, based on the frequency of intervention required. *Intermittent intervention* is defined as 'general observation and intermittent intervention required less frequently than every hour'. *Moderate intervention* is 'close observation and intermittent intervention required hourly or more often but less than every 15 minutes'. *Frequent intervention* is 'close and constant intervention required every 15 minutes or more often'. Forty-three percent of long term care residents require intermittent intervention to alter or prevent behaviour which could potentially cause an injury, 27% of residents require moderate amounts of intervention, and 7% require frequent intervention or monitoring due to this type of behaviour.

Figure 11 BEHAVIOURS OF DAILY LIVING

BEHAVIOUR	INTERVENTION REQUIRED	%	#
Potential for Injury	none	23.3%	2994
	intermittent intervention	43.2%	5546
	moderate intervention	26.6%	3418
	frequent intervention	6.8%	874
Ineffective Coping	none	24.0%	3077
	minor intervention	35.1%	4499
	moderate intervention	31.5%	4043
	intense intervention	9.5%	1213

Ineffective Coping Behaviour

'Ineffective coping reflects the resident's lack of ability to deal with individuals or with routine/daily living situations. Intervention for ineffective coping tends to be unpredictable, rather than on a routine schedule'[23]. It is slightly less common for residents to require assistance because they are experiencing difficulty coping with the environment than because of potentially injurious behaviour. Twenty-four percent of long term care residents do not require assistance with coping behaviour. Thirty-five percent require *minor intervention* (less than 30 minutes over a 24-hour period), 32% require *moderate intervention* or assistance (30 minutes up to, but not including, 2 hours over a 24-hour period), and 10% require *intense intervention* (2 hours or more over a 24-hour period).

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[23] Alberta Health, 1990. Alberta Resident Classification System for Long Term Care Facilities: Instruction Manual.

Specific Recorded Behaviours

A number of specific examples of behaviour requiring care are recorded at the time of classification. Figure 12 indicates the percentage of residents exhibiting each specific behaviour and compares the prevalence of the documented behaviours in male and female residents. Forty-four percent of residents exhibit sad or depressed behaviour and over forty percent of residents exhibit agitated and/or aggressive/angry behaviour to the extent that it increases care requirements.

A comparison of the proportion of males and females exhibiting each behaviour indicates that more males than females exhibit aggressive/angry behaviour, inappropriate sexual behaviour, abuse drugs and/or alcohol, resist treatment or care, smoke inappropriately, wander or exhibit suicidal behaviour. Females are more likely than males to exhibit sad or depressed behaviour, anxious behaviour, to hoard or rummage, to be suspicious, or to demand attention. Males are as likely as females to exhibit agitated behaviour, and to ingest foreign substances.

Figure 12 PREVALENCE OF BEHAVIOURS REQUIRING CARE BY GENDER (PERCENTAGES)

BEHAVIOUR	MALE	FEMALE	TOTAL
Sad/Depressed*	40.7	45.4	43.9
Aggressive/Angry Behaviour*	51.4	39.3	43.4
Agitated Behaviour	39.4	41.6	40.9
Anxious Behaviour*	31.9	40.5	37.6
Resists Treatment/Care*	40.1	35.4	37.0
Demands Attention*	27.3	31.3	29.9
Other Behaviour Requiring Care	45.6	45.8	45.7
Suspicious Behaviour*	16.3	19.7	18.6
Wandering*	20.3	17.0	18.1
Hoarding, Rummaging*	12.1	15.7	14.5
Inappropriate Smoking*	12.3	4.7	7.3
Alcohol/Drug Abuse*	11.4	3.3	6.0
Inappropriate Sexual Behaviour*	10.3	1.7	4.6
Ingestion of Foreign Substances	3.0	2.8	2.9
Suicidal Behaviour*	2.5	1.6	1.9

*Differences between male and female prevalence of behaviour are significant ($p<.01$) using a chi^2 test.

Discussion

The differences between the performance of behaviours requiring care by men and women may be explainable according to traditional sex roles. Such differences are not restricted to a long term care facility population, but are common among the general population as well. For *example, the previously mentioned study of psychiatric disorders in Edmonton by Bland et al.*[24]*, also indicated that more women experience a major depressive episode during their lifetime than men - the lifetime prevalence for such a disorder was 11.4% for women and only 5.9% for men. Male responses are typically negative physical behaviours such as aggressive behaviour, alcohol or drug abuse, resisting treatment and suicidal behaviour. Depression, anxiety, suspicion and demanding behaviour are traditionally female behaviours.*

CONTINUING CARE LEVEL

The term 'continuing care level' refers to ongoing care requirements due to incontinence, administration of medications and inability to communicate. The latter two measures are not used in the calculation of the classification category as neither measure significantly further differentiates between residents' overall care requirements once the eight classification indicator scores are taken into account[25].

Care For Incontinence

Figure 13 indicates that 49% of long term care residents require management procedures (e.g. regular toileting) for bladder incontinence, and 18% require either catheter care or are occasionally incontinent. The remaining 34% do not require care for urinary incontinence.

Figure 13 CONTINUING CARE LEVEL

TYPE OF IMPAIRMENT	LEVEL OF CARE	%
Urinary Continence	none	33.5%
	routine/minimal	17.6%
	management procedures	48.7%
	bladder retraining	0.1%
Bowel Continence	none	54.4%
	routine/minimal	10.5%
	management procedures	35.0%
	bowel retraining	0.1%

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[24] Bland, R.C., Newman, S.C., Orn, H. 1988. Epidemiology of Psychiatric Disorders in Edmonton, Acta Psychiatrica Scandinavica Supplementum, 338(77).

[25] Semradek, J., Giovannetti, P., Hornbrook, M., McKenzie, D., Will, S., 1988. Alberta Patient Classification System for Long Term Care Facilities: Final Report.

Fewer residents (46%) require care for bowel incontinence than require care for urinary incontinence (66%). Thirty-five percent require management procedures and 11% are occasionally incontinent or require routine ostomy care for bowel incontinence.

Further analysis of the data indicated that there is a statistically significant correlation[26] between gender and incontinence. A higher proportion of women require management procedures or retraining for urinary incontinence than men. Fifty percent of female residents require care for urinary incontinence while only 46% of male residents require such care. There is no difference between the proportion of men and women requiring care for bowel incontinence.

The proportion of residents requiring care for urinary incontinence also differs between rural and urban facilities. A higher proportion of residents in rural facilities require management procedures than do residents of urban facilities. Fifty-three percent of women in rural facilities require care for urinary incontinence, while only 48% of women in urban facilities require this type of care. Fifty-one percent of the men in rural facilities require such care, compared to only 44% of men in urban facilities.

Discussion

Women typically have more problems with urinary incontinence than do men, due to a number of factors, such as the stress placed on the bladder during pregnancy and childbirth. To determine the reason for the differences between the number of residents requiring care for incontinence in rural and urban facilities, further investigation is required.

Medications

A comparison of the number of medications taken per day by residents in Alberta's long term care facilities for 1988, 1989 and 1990 indicates that the average number of medications taken per day in 1989 (4.3) decreased from the 1988 figure of 4.7. The average number of medications taken per day by residents again decreased slightly to 4.2 in 1990. The number of medications prescribed also differs for men and women. Male residents take an average of 4.1 medications per day, while women take an average of 4.3 medications per day.

Discussion

The decreasing amounts of medications taken per day likely reflects changes in prescribing practices by physicians. Several recent studies indicate the increasing awareness of the

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[26] Differences were tested and found significant using Pearson Correlation Coefficients ($p<.01$).

tendency to over-medicate the elderly, due to inadequate understanding of "geriatric pharmacology"[27,28]*. Many facilities made a concerted effort to review medication orders and administration practices after the first year of classification, and the reduction in overall medication usage is currently interpreted as reflecting a trend toward more appropriate medication usage.*

Impaired Communication

Fifty-four percent of long term care residents experience some degree of impairment in communication. Three possible reasons for this impairment are provided on the Resident Classification Form. Twenty-six percent of residents were identified as having a physical impairment which created a barrier to communication. Some examples of physical conditions which are likely to cause communication problems include Huntington's chorea, amyotrophic lateral sclerosis (A.L.S.), cerebral palsy, head injury, cerebrovascular accident, hearing loss, Parkinson's disease, and multiple sclerosis. For instance, it was determined that 78% of Huntington's chorea residents, 63% of A.L.S. residents, 60% of residents with cerebral palsy, 59% with a diagnosed head injury, 56% of residents in the acute phase after a cerebrovascular accident, 49% of residents with a hearing loss, 39% of residents with Parkinson's disease, and 36% of residents with multiple sclerosis had a communication impairment due to a physical condition.

Eleven percent of residents were identified as having a language barrier which caused communication problems. This is not surprising, given the findings reported earlier that the preferred language of 24% of residents is something other than English.

The third potential reason for communication problems provided on the Resident Classification Form is a cognitive impairment. Thirty-eight percent of residents were identified as having a cognitive impairment which was related to their communication problems[29]. Examples of cognitive impairments which are likely to contribute to communication problems include diagnoses such as Alzheimer's disease. For instance, 71% of residents diagnosed with Alzheimer's disease were identified as having a communication problem due to a cognitive impairment. The same was true for 59% of residents with arteriosclerotic, multi-infarct and presenile and senile dementia, 54% of residents with chronic organic brain syndrome, 52% of residents with a head injury, and 49% of residents with a mental disorder following organic brain damage.

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[27] Buie, J., 1989. Elderly over-drugged, abandoned, panel says. A.P.A. Monitor, 20(4):26.

[28] Ferguson, J.A., 1990. Patient Age as a Factor in Drug Prescribing Practices, Canadian Journal on Aging, 9(3)278-295.

[29] Percentages for the three types of impairment (physical, language, and cognitive) do not add up to 54 because communication may be impaired for more than one reason.

Discussion

The ability to communicate is necessary for effective social interaction; restricted or impaired ability to communicate effectively isolates individuals. Communication barriers may be caused by staff not speaking the same language as residents, by sensory disorders or other physical conditions, or by cognitive impairments. Although communication impairments are experienced by a large portion of the resident population, this area is often overlooked when planning for the physical care requirements of individuals in long term care facilities.

THERAPEUTIC INTERVENTIONS

Figure 14 presents the percentage of residents receiving therapeutic treatments at the time of classification. These are ordered or approved by a physician and documented on the resident's record. Residents receiving these treatments represent a small proportion of the total resident population.

Figure 14 THERAPEUTIC INTERVENTIONS

TREATMENT	%	#
Wound Care	5.9%	761
Intramuscular Therapy	5.6%	717
Subcutaneous Injection	5.1%	651
Oxygen	2.9%	373
Chest Care	1.8%	237
Gastrostomy Feeding	1.0%	129
Sterile Dressing Changes	1.0%	125
Nasal/Oral Suctioning	0.6%	76
Insulin Injection	0.3%	36
Nasogastric Feeding	0.1%	16
Tracheostomy Care	0.1%	15
Parenteral Fluids	0.1%	15

According to the results of the 1990 classification, six percent of the residents in Alberta's long term care facilities are receiving an intra-muscular injection of medication, and 5% are receiving a subcutaneous injection of insulin. Six percent are receiving care for a subcutaneous lesion resulting from surgery, trauma or open ulcers and one percent of residents require sterile dressing changes on a wound. Two percent of residents require a chest care procedure such as nebulization, delivery of aerosol medication, or postural drainage, and 3% are receiving oxygen therapy. One percent of residents require gastrostomy feeding, and less than one percent require nasal or oral suctioning, insulin injections on a sliding dosage, tracheostomy care, parenteral fluids or nasogastric feeding.

Further analysis of the residents who are comatose, terminally ill, receiving parenteral fluids and those who have a tracheostomy was done to determine if residents with these conditions or treatments are predominantly younger or older. Figure 15 compares the number of residents over the age of 65 with the number under 65 with these conditions. Most (94%) terminally ill residents are over 65 years of age as are all of the residents on parenteral fluids. Approximately half of the residents with a tracheostomy (53%) and half of the residents who are comatose (48%) are over 65.

Figure 15 AGE DISTRIBUTION OF CLIENTS WITH SPECIAL NEEDS

TREATMENT/CONDITION	# -65	# +65	TOTAL	% OF TOTAL
Parenteral Fluids	0	13	13	.12%
Tracheostomy	7	8	15	.13%
Comatose	17	16	33	.28%
Terminally Ill	11	169	180	1.50%

Rural - Urban Differences

A comparison of the proportion of residents receiving therapeutic interventions in rural facilities with those in urban facilities indicates some significant differences (see Figure 16)[30]. Urban facilities have more residents receiving an intra-muscular injection than rural facilities, and a higher percentage receiving gastrostomy feeding. Rural facilities have a higher percentage of residents receiving a subcutaneous injection, oxygen therapy and wound care. There were no statistically significant differences between urban and rural facilities in the proportion of residents receiving insulin treatments, sterile dressing changes, chest care, nasal/oral suctioning, tracheostomy care, nasogastric feeding, or parenteral fluids. The reasons for these differences require further investigation.

Discussion

Overall, very few residents require therapeutic interventions.

EXTERNAL DEMAND LEVEL

External demand level refers to 'any behaviour of the resident's family or friends that either increases or decreases the resident's or the family's or friends' need for care or assistance. This includes any behaviour that alters the resident's need for assistance from staff by decreasing the resident's demands on staff or by increasing the family's demands on staff.'[31]

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[30] The difference in the number of residents receiving therapeutic interventions between urban and rural facilities was significant ($p<.01$) using a chi^2 test of significance. The size of the population receiving therapeutic interventions is small and therefore a difference of 1% is sufficiently large for statistical significance.

[31] Alberta Health, 1990. Alberta Resident Classification System for Long Term Care Facilities: Instruction Manual.

Figure 16 THERAPEUTIC INTERVENTIONS - RURAL VS. URBAN FACILITIES

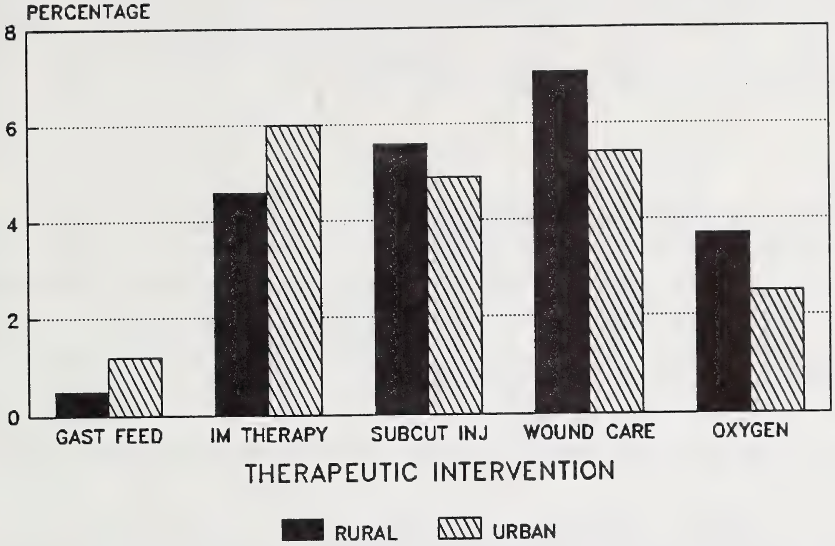

Figure 17 indicates the percentage of residents receiving assistance from family members, and the percentage of residents whose family members require assistance from staff. Six percent of residents do not receive any assistance from family members. Thirty-four percent receive assistance less than weekly, 48% receive assistance more often (but less than daily) and 13% receive daily assistance from family members.

Figure 17 FAMILY SUPPORT OR NEED FOR SUPPORT

FAMILY ASSISTANCE TO RESIDENT	
Never	5.5%
Less than weekly	33.5%
Less than daily	47.8%
Daily	13.2%
ASSISTANCE FROM STAFF TO FAMILY	
Never	10.9%
Less than weekly	47.3%
Less than daily	34.1%
Daily	7.6%

Almost 8% of residents have family members who require daily assistance from staff members, while 11% of residents have family members who never require assistance from staff. Forty-seven percent of residents' family members require assistance occasionally (less than weekly), and 34% require assistance often (less than daily).

The correlation between family members giving and requiring assistance was tested and found significant using Pearson's Correlation Coefficients ($r=.7$, $p<.01$). Fifty-five percent of those families who provide assistance on a daily basis also require daily assistance from staff members; a small percentage (2%) of family members providing daily assistance never require assistance from staff.

Discussion

Sixty-one percent of long term care facility residents receive assistance from family members more frequently than once a week. This finding is in direct contrast to the commonly held belief that family members abandon their relative after entrusting them to facility staff for physical care. However, the high correlation between family members providing and requiring assistance suggests that family members of some residents are heavily involved in their relative's care; active involvement would require both assistance to their relative and interaction with staff members. A small number of residents do not have a family member involved in their care: the family members of 664 residents (5.2%) neither require nor provide assistance.

RESIDENTS WITH THE LEAST AND MOST CARE REQUIREMENTS

As outlined previously, each resident's care requirements are determined in the three care domains: Activities of Daily Living (ADL), Behaviours of Daily Living (BDL) and Continuing Care Level (CCL). This information is then used to calculate the classification category for each resident. There are seven categories, labelled 'A' through 'G'; 'A' represents the lowest level of nursing care requirements and 'G' residents place the heaviest demand on nursing care[32]. In order to address questions 2 and 3, the classification categories were used to define the residents with lowest and highest care requirements.

RESIDENTS WITH LOW CARE REQUIREMENTS

Residents with low care requirements were defined as those classified at categories A and B. A total of 3227 residents were classified at categories A and B in the 1990 Resident Classification, accounting for 25% of the total long term care facility resident population. Men account for a higher proportion of this group of residents (36%) than for residents with higher care requirements (33%). Residents in this group receive more medications per day (4.6) than residents with higher care requirements (4.1). The average age of these residents is 80.9 years old.

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[32] A complete description of the classification categories is included in Appendix B.

Medical Diagnoses

Figure 18 TEN MOST COMMON MEDICAL DIAGNOSES - RESIDENTS WITH LOW CARE REQUIREMENTS VS. OTHERS

DIAGNOSIS	% WITH LOW CARE REQUIREMENTS	% OTHERS
Osteoarthritis	28.1%	25.0%
Hypertension	17.7%	14.1%
Diabetes Mellitus	17.3%	14.2%
Heart Failure	17.0%	13.5%
Depression	14.9%	12.0%
Dementia	14.2%	26.0%
C.O.P.D.	14.0%	9.0%
Hearing Loss	10.9%	9.8%
Cerebrovascular Accident	10.6%	18.3%
Cataract	9.7%	7.7%

The ten most common medical diagnoses for this group of residents are presented in Figure 18. The most common diagnoses for residents with the lowest care requirements are similar to those of residents with higher care requirements, although the frequency of diagnoses among the groups differs. More residents with low care requirements are diagnosed with osteoarthritis (28%) than residents with higher care requirements (25%). Eighteen percent of these residents had a diagnosis of hypertension, but only 14% of other residents had this diagnosis. Seventeen percent of residents with low care requirements had a diagnosis of diabetes, and 17% had a diagnosis of heart failure. In comparison, only 14% of residents with higher care requirements had a diagnosis of diabetes, and 13% had a diagnosis of heart failure. Fifteen percent of residents with low care requirements had a diagnosis of depression, while only 12% of residents with higher care requirements had this diagnosis. Perhaps most significant is the difference between the two groups of residents in the frequency of the diagnosis of dementia or cerebrovascular accident. Only 14% of residents with low care requirements have a diagnosis of dementia, while 26% of residents with high care requirements have this diagnosis. Similarly, 11% of residents with low care requirements have a diagnosis of cerebrovascular accident, but 18% of residents with higher care requirements have this diagnosis.

Rural - Urban Differences

The proportion of residents classified at categories A and B residing in rural facilities is similar to the proportion of residents classified at higher categories. Thirty-one percent of residents with low care requirements reside in rural facilities and 69% of these residents reside in urban facilities.

RESIDENTS WITH NO DOCUMENTED CARE REQUIREMENTS

There is a small group of residents (256 or 2%) who scored 0 on all eight classification indicators. Such a score indicates that these residents do not require regular assistance with the activities of daily living, do not exhibit the two behaviours used as classification indicators, and do not have continuing care requirements. The information collected on these residents was examined to determine if there were any differences between this group and the rest of the long term care facility population. It was found that these residents are more likely to be located within urban facilities, more likely to be on insulin, and less likely to be receiving care for a wound than other residents[33]. These residents also receive more medications (4.38) per day than the average resident (4.25) but have fewer medical diagnoses (4.2 diagnoses compared to 4.4 for other residents).

Medical Diagnoses

The ten most common medical diagnoses for this group of residents are presented in Figure 19. Although the most common diagnoses for this group are similar to that of other residents, the frequency of some diagnoses is different for the two groups. More of these residents are diagnosed with hypertension (20%) than the average long term care resident (15%). Seventeen percent of these residents had a diagnosis of heart failure, but only 14% of other residents had this diagnosis. Fourteen percent of the residents who scored zero on all classification indicators had a diagnosis of chronic obstructive pulmonary disease, high compared to an average of 10% among other residents. More of these residents are diagnosed with chronic alcoholism (11%) than other residents (4%). Only 11% of residents in this group had a diagnosis of dementia (not including Alzheimer's disease) - a small number compared to 23% for other long term care residents.

Figure 19 TEN MOST COMMON MEDICAL DIAGNOSES - RESIDENTS WHO SCORED 0 ON ALL INDICATORS

DIAGNOSIS	%
Osteoarthritis	26.2%
Hypertension	20.3%
Heart Failure	17.2%
Diabetes Mellitus	16.0%
C.O.P.D.	14.4%
Depression	13.7%
Alcoholism, Chronic	11.3%
Dementia	10.9%
Hearing Loss	10.9%
Cataract	10.1%

Rural - Urban Differences

A smaller proportion of residents who scored zero on all classification indicators reside in rural facilities than other residents. Twenty-three percent of the residents in this category reside in rural facilities, while 32% of all other residents reside in rural facilities.

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[33] Differences were significant (p<.01) using chi^2 test of significance.

Discussion

Further information is required before an adequate understanding of these residents can be reached.

RESIDENTS WITH HIGH CARE REQUIREMENTS

The residents classified at categories F and G have the highest care requirements. As described earlier, these residents require an average of 3.4 (F) and 5.18 (G) times as much nursing care as a category A resident. A total of 4595 residents were classified at categories F and G in the 1990 resident classification, accounting for 36% of the long term care resident population. An analysis of the information collected on the residents with high care requirements indicates that these residents are more likely to be located within urban facilities (67% reside in urban facilities), receive more assistance from family members, and receive fewer medications (3.9) than residents classified at lower categories. The average age of these residents is 80 years old.

Medical Diagnoses

The ten most common medical diagnoses for this group of residents are presented in Figure 20. Although most of the common diagnoses for this group are similar to those of other residents, the frequency of some diagnoses is different for the two groups. Dementia is the most common diagnosis for this group of residents; 29% of residents with high care requirements have a diagnosis of dementia and an additional 21% have a diagnosis of Alzheimer's Disease. Only 20% of residents classified at categories A through E have a diagnosis of dementia, and 8% have a diagnosis of Alzheimer's Disease. Cerebrovascular accident is diagnosed for a larger percentage of residents with high care requirements (21%) than for residents with lower care requirements (14%). Atherosclerosis is also diagnosed for a greater proportion of residents with high care requirements (11%) than residents with lower care requirements (9%). Hearing loss is diagnosed for 9% of this group, but is diagnosed for a slightly greater proportion of residents with lower care requirements (11%). Osteoarthritis is also a common diagnosis for both groups of residents, although it is slightly more prevalent among residents with lower care

Figure 20 TEN MOST COMMON MEDICAL DIAGNOSES: RESIDENTS WITH HIGH CARE REQUIREMENTS VS. OTHERS

DIAGNOSIS	% WITH HIGH CARE REQUIREMENTS	% OTHERS
Dementia	29.0%	19.8%
Osteoarthritis	23.0%	27.0%
Alzheimer's disease	21.1%	8.2%
Cerebrovascular Accident	20.8%	13.9%
Diabetes	13.2%	15.7%
Hypertension	12.8%	16.3%
Heart Failure	11.2%	16.1%
Atherosclerosis	10.7%	8.6%
Depression	10.0%	14.2%
Hearing Loss	9.0%	10.7%

requirements (23% of residents with high care requirements and 27% of residents with lower care requirements). Diabetes, hypertension, heart failure and depression all rank among the ten most common diagnoses for residents with high care requirements, but are less prevalent among this group than they are for residents with lower care requirements. Diabetes and hypertension are each recorded diagnoses for 13% of the residents with high care requirements, and 16% of residents with lower care requirements. Heart failure is diagnosed for 11% and depression for 10% of F and G residents, while 16% of other residents have a diagnosis of heart failure, and 14% have a diagnosis of depression.

Therapeutic Interventions

The number of residents with high care requirements receiving a therapeutic intervention was compared with those with lower care requirements and the differences were found significant for several interventions[34]. Residents with high care requirements are more likely to be receiving nasal/oral suctioning (1.6%), nasogastric feeding (all 16 residents receiving this intervention), gastrostomy (2.6%), parenteral fluids (0.2%), sterile dressing changes (1.6%) and other wound care (9%). These residents are less likely to be receiving oxygen (2%) or chest care (1.5%).

Discussion

Residents with high care requirements account for 36% of the total long term care facility resident population. A diagnosis of dementia or Alzheimer's disease is more common for this group of residents than for residents with fewer care requirements. These residents are also slightly younger, on average, and have fewer prescribed medications.

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[34] Differences were significant (p<.01) using a chi^2 test of significance.

SUB-GROUPS IN THE LONG TERM CARE FACILITY POPULATION

It is possible to identify a number of sub-groups within Alberta's long term care facility population. Three sub-groups of residents are discussed below: the frail elderly, the cognitively impaired, and the young handicapped. The population has been divided into these sub-groups for two reasons. Firstly, each of the three sub-groups are comprised of residents with similar characteristics and care requirements. Secondly, the groups as defined are directly comparable to groups typically discussed in the literature on aging and long term care. This allows some discussion and comparison between Alberta's long term care facility resident population and similar groups both outside Alberta's long term care facilities and outside the province.

The largest group of residents are the frail elderly. For the purposes of this report, frail elderly residents are defined as all residents over the age of 65 who do not have a diagnosis of mental retardation or dementia. This category is the largest of the groups and represents the typical or average long term care facility resident. Fifty-three percent of the resident population are frail elderly.

The second largest population group are residents with cognitive impairment. In this report, all residents with a diagnosis of mental retardation or any form of dementia[35] are defined as cognitively impaired. This definition may be broader than those used in other reports, but it represents a resident population group with similar care requirements. Forty percent of the long term care resident population are cognitively impaired using this definition. According to recent estimates[36], we can expect the proportion of cognitively impaired residents to increase in the future.

The young handicapped population is defined, for the purposes of this report, as all residents under the age of 65. While this definition may result in grouping dissimilar residents, the decision appears justified, since residents under the age of 65 may have unique needs compared to those over 65. Approximately 9% of the resident population are younger than 65.

Figure 21 identifies the proportion of residents in each of these three sub-groups. There is some overlap between the Cognitively Impaired and the Young Handicapped populations, accounting for those residents who have a diagnosis of cognitive impairment and are under the age of 65. The characteristics of the three sub-groups are outlined below.

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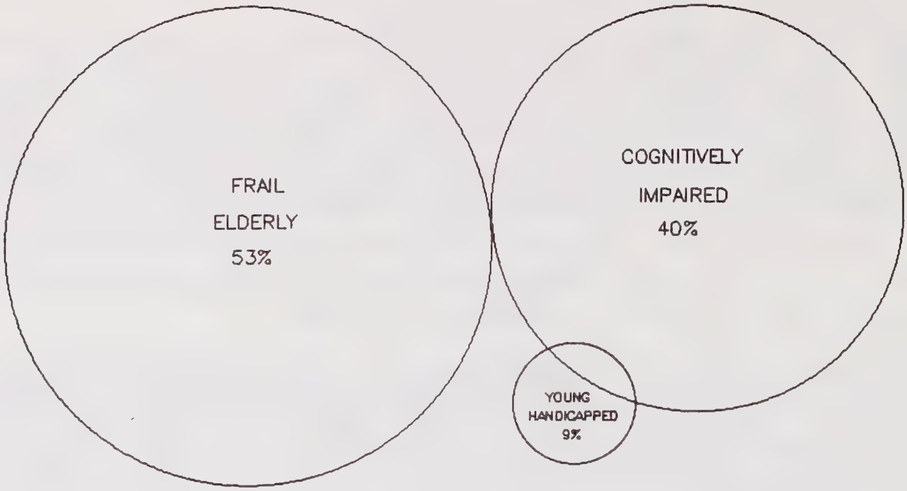
[35] Dementias include chronic organic brain syndrome, presenile, senile, multi-infarct and arteriosclerotic dementias, Korsakoff's psychosis, and Alzheimer's disease.

[36] Evans, D., Funkenstein, H., Alberta, M., Scherr, P., Cook, N., Chown, M., Hebert, L., Hennekens, C., Taylor, J., 1989. Prevalence of Alzheimer's Disease in a Community Population of Older Persons: Higher Than Previously Reported, Journal of the American Medical Association, 262(18):2551-2562.

Figure 21 POPULATION SUB-GROUPS IN ALBERTA'S LONG TERM CARE FACILITIES



FRAIL ELDERLY RESIDENTS

The five most common diagnoses for this group of residents are osteoarthritis (30%), cardiovascular accident (22%), heart failure (18%), diabetes (18%) and hypertension (18%). Frail elderly residents have an average of 5.21 diagnoses and receive an average of 4.8 prescribed medications each day.

Comparison of Category Distribution

A higher percentage of frail elderly residents (45%) are in the lighter care categories (A, B, and C) than is true for the other residents (27%) (see Figure 22). The two lightest care categories (A and B) have significantly more frail elderly residents than other residents. Seven percent of frail elderly residents are classified at category A, while only 2% of other residents are classified at this category, and 25% of frail elderly are classified at category B, compared to 15% of other residents. Fewer frail elderly residents are classified at E, F or G categories than other residents. Frail elderly residents scored lower on all eight indicators compared to other residents[37].

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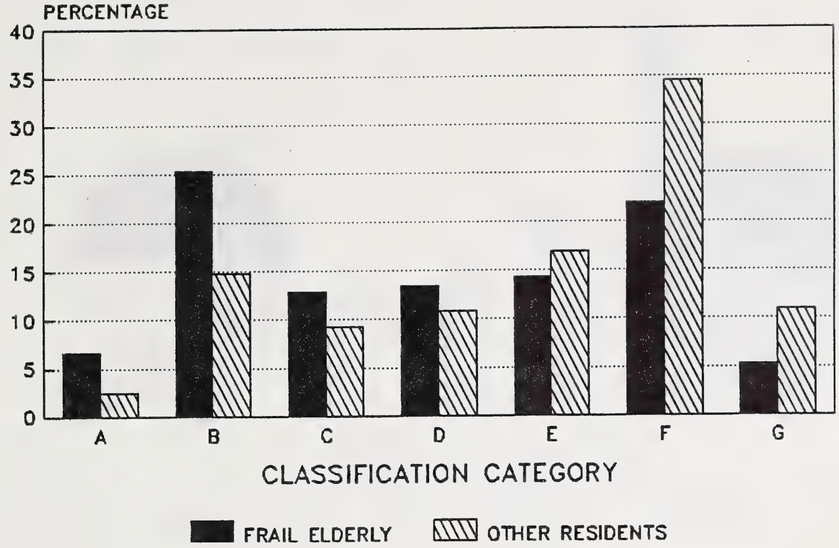
[37] Differences were significant ($p<.01$) using a chi^2 test of significance.

Figure 22 CLASSIFICATION CATEGORIES - FRAIL ELDERLY VS. OTHER RESIDENTS



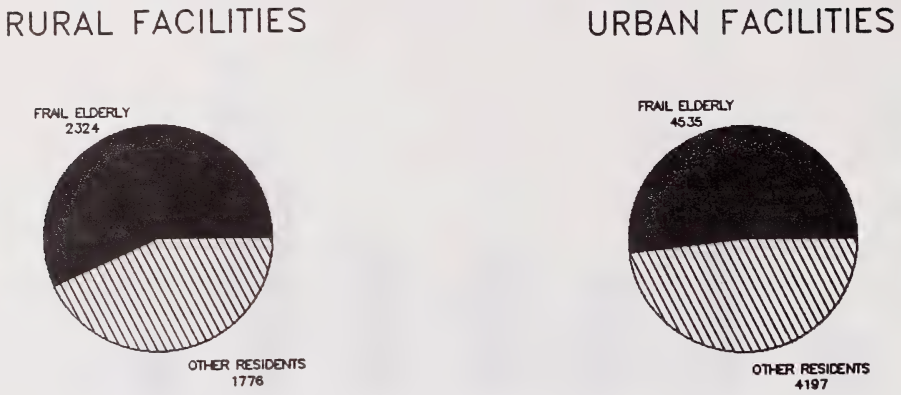
Age Distribution of Frail Elderly Residents

The majority of frail elderly residents fall into the older age groups. Only 15% of the frail elderly population is between the ages of 65 and 74, while 34% are between the ages of 75 and 84, and 50% are over 85 years of age. The average age of this group is 83.7 years.

Rural - Urban Differences

Rural facilities house 32% of the total long term care facility resident population and have a slightly higher proportion of frail elderly residents than urban facilities. This group represents 57% of the rural long term care facility population, but only 52% of residents of urban long term care facilities. Rural facilities have a higher proportion of residents in the older age groups, which may account for the higher percentage of frail elderly residents in rural facilities.

Figure 23 FRAIL ELDERLY - RURAL VS. URBAN FACILITIES



COGNITIVELY IMPAIRED RESIDENTS

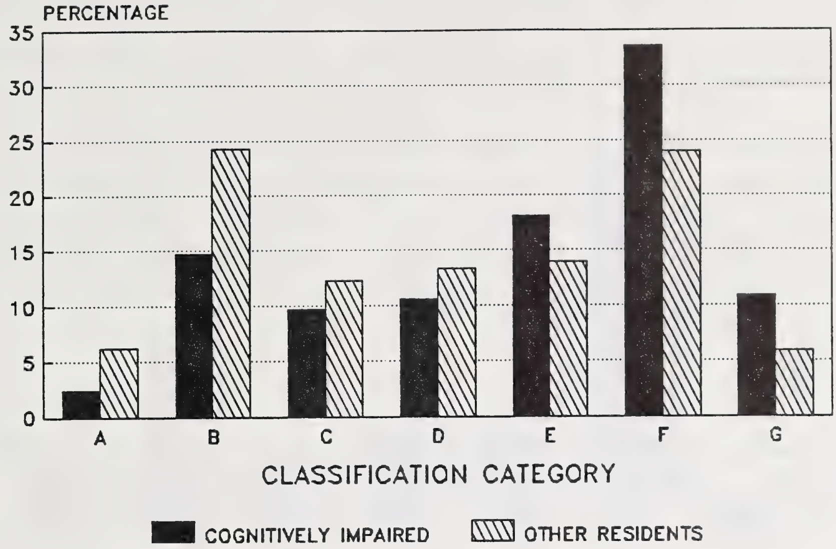
Comparison of Category Distribution

Cognitively impaired residents are typically classified as requiring heavier care (see Figure 24). Only 17% of cognitively impaired residents are classified at categories A and B, compared to 30% of other residents. Thirty-eight percent of cognitively impaired residents are classified as requiring medium care (categories C, D and E), and 44% are classified as requiring heavy care (categories F and G). Cognitively impaired residents have an average of 4.3 medical diagnoses and receive an average of 3.5 prescribed medications each day.

Age Distribution of Cognitively Impaired Residents

Compared to the age distribution of the entire long term care resident population, a smaller proportion of cognitively impaired residents fall into the youngest age category: 9% of the entire population are younger than 65, but only 6% of the cognitively impaired population fall into this age group. A larger proportion of cognitively impaired residents are between the ages of 75 and 84 (36%) compared to the overall population distribution (33%).

Figure 24 CLASSIFICATION CATEGORIES - COGNITIVELY IMPAIRED VS. OTHER RESIDENTS



Rural - Urban Differences

Rural facilities have an equal proportion of cognitively impaired residents and other residents. Thirty-one percent of cognitively impaired residents are located in rural facilities; an almost equal percentage of other residents (32%) reside in rural facilities. Urban facilities also have similar proportions of cognitively impaired and other residents.

Cognitive Impairment and Behaviours Requiring Care

The relationship between an ICD-9-CM diagnosis of psychological problems and care staff documentation of behaviours requiring care was tested and found significant[38]. There is a positive relationship between a diagnosis of Alzheimer's disease and documented behaviours of wandering, hoarding/rummaging, resisting care, agitation, aggressive behaviour and ingestion of foreign substances. A diagnosis of Alzheimer's disease also correlates negatively with a number of behaviours: demanding attention, depression, and alcohol or drug abuse. That is, a resident with a diagnosis of Alzheimer's disease is less likely to demand attention, be depressed, or to abuse drugs or alcohol than is true for all other long term care facility residents.

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[38] Differences were significant ($p<.01$) using a chi^2 test of significance.

The diagnoses of chronic organic brain syndrome, senility without psychosis and dementia also correlate with predictable behaviours. A diagnosis of chronic organic brain syndrome is positively correlated to aggressive behaviour, inappropriate smoking, resisting care, agitated behaviour, and alcohol or drug abuse. This diagnosis is not significantly negatively correlated with any behaviours. A diagnosis of senility without psychosis is positively correlated with wandering and hoarding/rummaging and is negatively correlated with inappropriate smoking. A diagnosis of dementia (including only presenile, senile and multi-infarct arteriosclerotic dementias) is positively correlated with wandering, hoarding/rummaging, suspicious behaviour, agitated or aggressive behaviour, anxious behaviour, resisting care and ingesting foreign substances. This diagnosis is negatively correlated with inappropriate smoking, demanding attention, depression and alcohol or drug abuse.

Discussion

These findings are consistent with a similar analysis of the 1989 Resident Classification data[39]*, demonstrating the reliability of both the findings and the data collection process.*

YOUNG HANDICAPPED RESIDENTS

While young handicapped residents account for 9% of the total population, a higher proportion of these residents are male. Thirteen percent of male residents are under the age of 65, compared to only 7% of female residents. The most common medical diagnoses for the young handicapped residents were outlined previously (Figure 9). For those residents who are younger than age 65, the most common medical diagnosis is multiple sclerosis (22%). Approximately 13% of residents in this age group are diagnosed with epilepsy, 13% with depression, 12% with mental retardation, 12% with cerebrovascular accident and 11% with para- or quadriplegia. Young handicapped residents have an average of 3.5 medical diagnoses and receive an average of 4.6 prescribed medications each day. The average age of this group is 51.7 years.

Comparison of Category Distribution

A comparison of the classification categories of young handicapped residents with all other residents indicates that a higher proportion of young handicapped fall into the heavier care categories (see Figure 24). A smaller percentage of young handicapped residents are classified in the five lighter care categories (A,B,C,D and E) than other residents, and category F accounts for the largest percentage of young handicapped residents (37%). Young handicapped residents scored higher on all four of the ADL indicators and both BDL indicators. There were no differences between the young handicapped population and other residents on the two CCL classification indicators[40].

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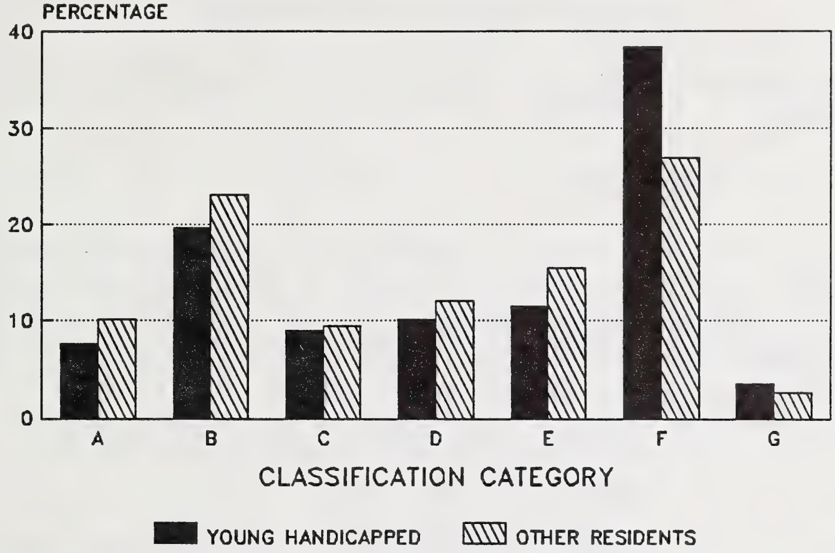
[39] Schalm, C. and Smith, D., 1990. A Descriptive Analysis of Behaviour Disorders Among Residents of Alberta's Long Term Care Facilities, presented at the 19th Annual Meeting of the Canadian Association on Gerontology.

Figure 25 CLASSIFICATION CATEGORIES - YOUNG HANDICAPPED VS. OTHER RESIDENTS



Rural - Urban Differences

Sixty-four percent of residents aged 19 to 45 reside in large (200+ beds) urban facilities. However, 4 of the 6 residents under 18 years of age reside in rural facilities.

Discussion

The long term care facility resident population consists primarily of frail elderly and cognitively impaired residents. Frail elderly residents have fewer care requirements than other residents. Cognitively impaired residents have higher care requirements than residents without a diagnosis of cognitive impairment, and young residents have higher care requirements than older residents.

According to a recent study,[41] *residents diagnosed with Alzheimer's disease typically have fewer diagnoses and fewer prescribed medications. This holds true for the cognitively impaired residents in Alberta's long term care facilities; they have fewer diagnoses than do the frail*

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[40] Differences were significant (p<.01) using a chi^2 test of significance.

[41] Wolf-Klein, G., Silverstone, F., Brod, M., Levy, A., Foley, C., Termotto, V., Breuer, J., 1988, Are Alzheimer Patients Healthier? Journal of the American Geriatrics Society, 36(3):219-224.

elderly residents (an average of 4.3 diagnoses for cognitively impaired residents compared to an average of 5.2 diagnoses for frail elderly residents), as well as fewer prescribed medications (3.5 compared to 4.8).

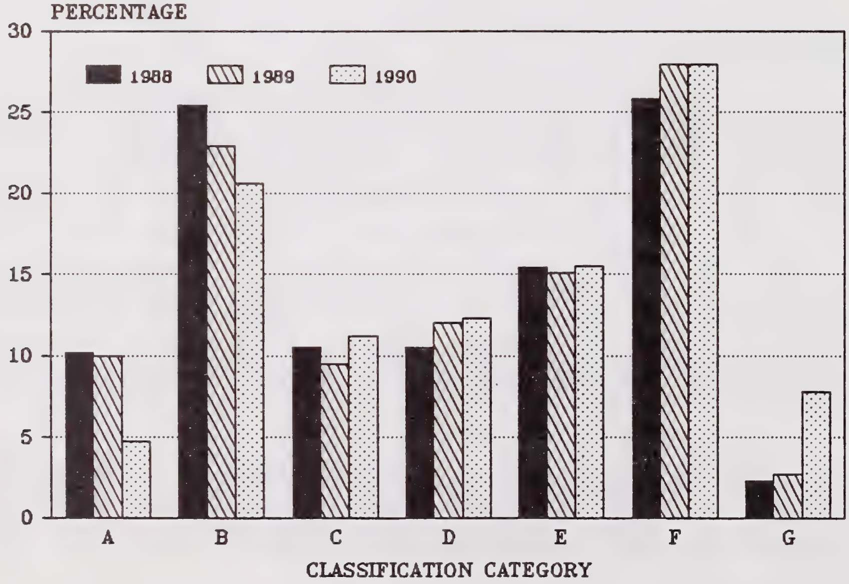
CLASSIFICATION CATEGORIES

The resident classification categories were further analyzed to determine if any patterns were discernable.

Comparison of Case Mix Measures

Figure 25 illustrates the distribution of residents in each classification category for 1988, 1989 and 1990. The proportion of residents in lower categories (categories A and B) decreased each year with a corresponding increase in the proportion of residents in higher categories (categories C, D, E, and G). Overall, the provincial case-mix measure increased by 2.6% in 1989, and increased again by 9.8% in 1990. That is, the documented nursing care requirements of long term care residents increased by 2.6 percent in 1989 and by 9.8% in 1990. It will be interesting to follow this trend over time to determine if it continues in the same direction.

Figure 26 PERCENTAGE OF RESIDENTS IN EACH CLASSIFICATION CATEGORY, 1988, 1989 & 1990



Comparison of Resident Classification Categories, 1989-1990

Figure 26 compares the classification categories of those residents who were classified in both 1989 and 1990. Of the 12,644 residents classified in 1989, 9237 residents were still living in a long term care facility and were classified in 1990. For example, the first row of residents were category A in 1989; of these, 22% were still classified as A's in 1990, 51% were classified as B's in 1990, 13% were classified as C's, and so on. The residents along the diagonal (shaded) were classified as being in the same category in both years. The residents to the right of the diagonal were in higher categories in 1990, meaning they had greater care requirements then in the previous year, and the residents to the left of the diagonal were in lower categories in 1990, meaning they required less nursing care. Almost half (46%) were in the same category in both years, 42% were in higher categories, and 12% were in lower categories in 1990. Overall, residents were more likely to increase in care than to decrease but they were most likely to stay in the same classification category over a one year time-frame. The case-mix measure (nursing care requirements) of these residents increased 14.9% in one year.

Figure 27 COMPARISON OF RESIDENT'S CLASSIFICATION CATEGORY, 1989 VS. 1990

1989 CLASSIFICATION CATEGORY		1990 CLASSIFICATION CATEGORY							ROW TOTAL
		A	B	C	D	E	F	G	
A	#	223	522	128	68	36	25	16	1018
	%	21.9	51.3	12.6	6.7	3.5	2.5	1.6	11.0
B	#	140	1044	443	294	208	87	69	2285
	%	6.1	45.7	19.4	12.9	9.1	3.8	3.0	24.7
C	#	16	197	185	193	150	84	49	874
	%	1.8	22.5	21.2	22.1	17.2	9.6	5.6	9.5
D	#	10	76	120	327	281	171	104	1089
	%	0.9	7.0	11.0	30.0	25.8	15.7	9.6	11.8
E	#	2	19	38	133	505	491	179	1367
	%	0.1	1.4	2.8	9.7	36.9	35.9	13.1	14.8
F	#	0	3	6	46	157	1884	270	2366
	%	0.0	0.1	0.3	1.9	6.6	79.6	11.4	25.6
G	#	0	0	2	15	43	100	78	238
	%	0.0	0.0	0.8	6.3	18.1	42.0	32.8	2.6
COLUMN TOTAL	#	391	1861	922	1076	1380	2842	765	9237
	%	4.2	20.1	10.0	11.6	14.9	30.8	8.3	100.0

Figure 27 shows the 1990 status (i.e. discharged, deceased, same facility) of every resident who was classified in 1989. Seventy-three percent of the residents remained in the same facility and were classified both years. The majority of the 27% discharged were due to death (69% of discharges or 19% of residents classified in 1989). Five percent of residents were transferred to other long term care facilities, 2% were discharged to acute care hospitals, and 1% were discharged to the community. It is interesting to note that although the majority of residents discharged to the community were in the lower classification categories in 1989, residents from all seven categories returned to the community.

Thirty-five residents classified in 1989 remained in the same facility, but could not be classified in 1990 because their chart was unavailable, or they were out of the facility on the day of classification. Seven residents classified in 1989 were transferred to one of the three provincial adult extended care centres (Rosehaven, Raymond, or Claresholm), and 20 were transferred to a psychiatric hospital (either Alberta Hospital Edmonton or Alberta Hospital Ponoka). Twelve others were given a discharge status code of "other", probably representing residents who moved out of the province. The discharge rate of light care residents was much lower than the discharge rate for heavy care residents. Eighty percent of A and B category residents remained in the same facility in 1990 while only 67% and 68% of category F and G residents, respectively, remained in the same facility.

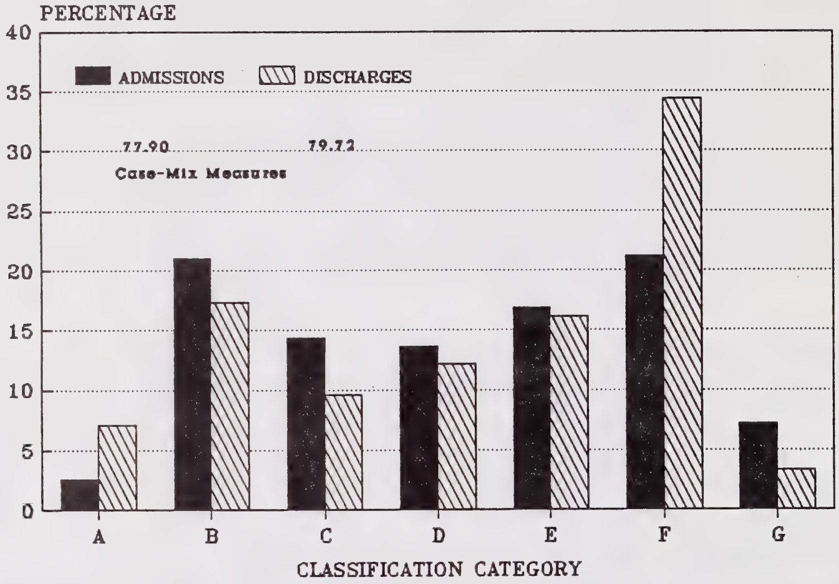
It is important to note that these data reflect only those residents classified in 1989. Because classification is done only once a year, the data represent a "snapshot" of those individuals residing in long term care facilities at the time of classification. Thus, it would not be accurate to state, for instance, that only one percent of individuals admitted to long term care facilities are discharged back to the community, because these data do not capture admissions and discharges occurring between classification periods. If an individual is admitted after classification is completed, and discharged before the next year's classification period, he/she will not appear in these data.

Figure 28 1990 STATUS OF ALL RESIDENTS CLASSIFIED IN 1989

				DISCHARGED TO:							
1989 CLASSIFICATION CATEGORY		RESIDES IN SAME FACILITY	CHART NOT AVAILABLE	DECEASED	OTHER LTC FACILITY	ACUTE CARE	EXTENDED CARE CENTRES	PSYCHIATRIC HOSPITAL	COMMUNITY	OTHER	ROW TOTAL
A	#	1018	6	133	40	32	1	0	33	2	1265
	%	80.5	0.5	10.5	3.2	2.5	0.1	0.0	2.6	0.2	10.0
B	#	2285	15	336	108	71	2	11	55	2	2885
	%	79.2	0.5	11.6	3.7	2.5	0.1	0.4	1.9	0.1	22.8
C	#	874	2	193	74	40	0	2	13	2	1200
	%	72.8	0.2	16.1	6.2	3.3	0.0	0.2	1.1	0.2	9.5
D	#	1089	8	280	73	13	1	3	19	2	1508
	%	72.2	0.5	18.6	4.8	2.2	0.1	0.2	1.3	0.1	11.9
E	#	1367	1	371	108	56	0	1	5	2	1911
	%	71.5	0.1	19.4	5.7	2.9	0.0	0.1	0.3	0.1	15.1
F	#	2366	3	976	144	25	2	3	5	2	3526
	%	67.1	0.1	27.7	4.1	0.7	0.1	0.1	0.1	0.1	27.9
G	#	238	0	70	26	13	1	0	5	0	349
	%	68.2	0.0	20.1	7.4	3.7	0.3	0.0	0.3	0.0	2.8
COLUMN	#	9237	35	2359	573	270	7	20	131	12	12644
TOTAL	%	73.1	0.3	18.7	4.5	2.1	0.1	0.2	1.0	0.1	100.0

As noted earlier, the care requirements of residents who remained in the same facility for both classifications increased by 14.9 percent, but the provincial case-mix measure increased by only 9.8 percent from 1989 to 1990. This difference results from the combination of two phenomena: the higher proportion of discharged residents who were classified at heavier care categories and the higher proportion of admitted residents who were classified at lower care categories. Figure 28 compares the classification categories of residents who were admitted between classifications to those residents who were discharged after the 1989 classification.

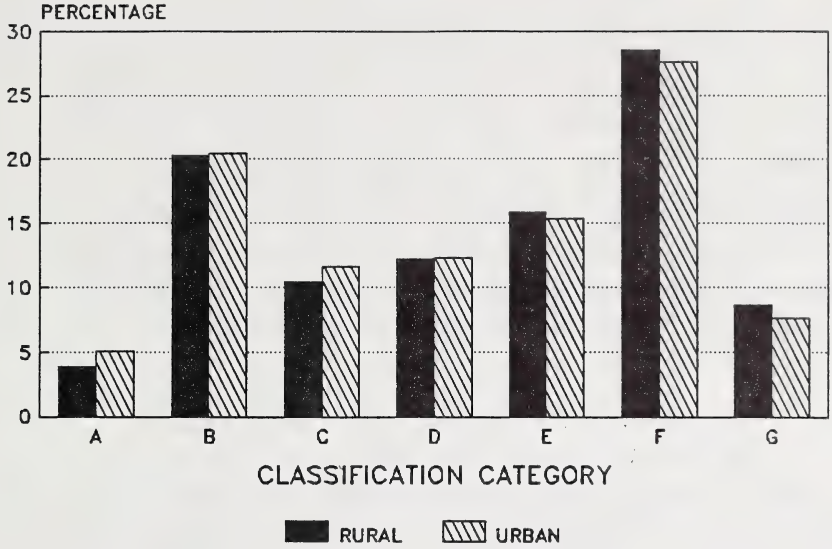
Figure 29 ADMISSIONS VS. DISCHARGES: 1989 - 1990



Rural - Urban Differences

A comparison of the proportion of residents in each category in rural facilities with the proportion in urban facilities indicates that there is no statistically significant difference in the amount of nursing care required (see Figure 29). Rural facilities have approximately the same proportion of residents in each classification category as do urban facilities.

Figure 30 CLASSIFICATION CATEGORIES - RURAL VS. URBAN FACILITIES



EMERGING POPULATIONS

Groups of residents which may become more significant within the overall population of long term care facilities have been termed 'emerging populations' for the purposes of this project. The significance of an emerging population is determined by analyzing trends over time. Two emerging sub-groups are examined in this analysis. They are individuals with a brain injury and those who might be assumed to have unusually high care requirements when compared with most other long term care facility residents. While it is possible to identify the brain injured by diagnosis, the potentially 'high need' client is more difficult to identify. The therapeutic interventions indicators and the medical conditions of 'terminally ill' and 'comatose' were used to define the potentially 'high need' clients for the purposes of this report.

RESIDENTS DIAGNOSED WITH A HEAD INJURY

Residents with an active head injury diagnosis[42] are identified by the resident classification process. Although the residents with this diagnosis currently represent only a small proportion of the long term care facility population, this number may increase with advances in the technology required to save or prolong the life of individuals with a severe head injury.

Parkinson, Stephenson and Phillips[43] suggest that the projected incidence of head injury in Canada is 2.2 per 1000 population. The actual number of people diagnosed with a head injury in Alberta in 1989 was slightly higher than this estimate at 2.3 per 1000, or 1068 people.[44] Although this represents only a small portion of those who receive a head injury, since not all people with a head injury are admitted to a hospital, many of these people experience long term disabilities such as post-traumatic epilepsy, altered behaviour, loss of muscular control, blindness or deafness. People who have received a head injury, regardless of the severity, may also require some form of long term care due to indirectly related problems which develop as they age. In addition, behavioral and emotional problems caused by the injury can result in difficulties adjusting to requirements of everyday life which may ultimately result in admission to a long term care facility. Although the causal relationship is still under examination, several studies have also indicated that a relationship exists between receiving a head injury and developing Alzheimer's disease in later life[45,46]. Alternatively, Gedye et al suggest that a severe head injury may simply "hasten the onset of symptoms of Alzheimer's disease in persons vulnerable to the disorder"[47]. This group appears to be at greater risk of developing symptoms of the disease as they age.

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[42] Such a definition excludes all residents who may have had an undiagnosed minor head injury.

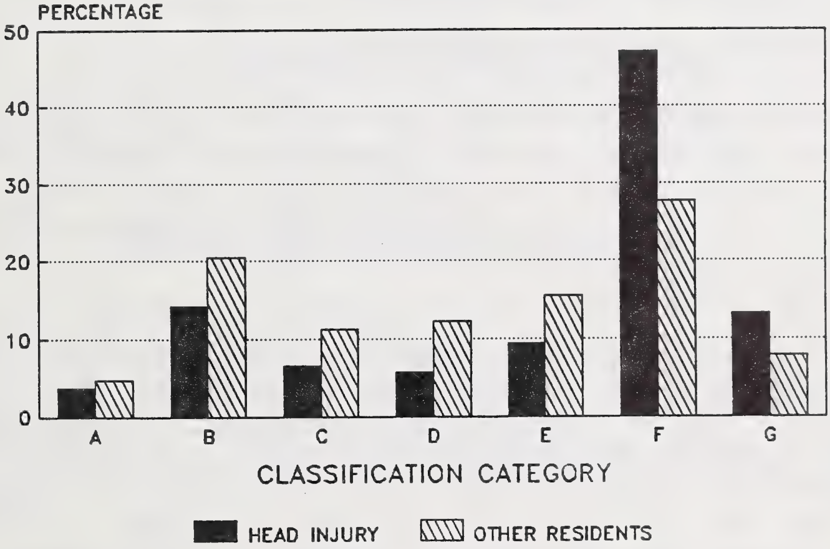
[43] Parkinson, D.; Stephenson, S; Phillips, S., 1985. Head Injuries: A Prospective Computerized Study, Canadian Journal of Surgery, 28(1):79-82.

[44] Health Economics and Statistics, Alberta Health Morbidity Files, 1989/90. Alberta Health.

Comparison of Category Distribution

A small proportion of the total long term care facility population (.8% or 106 people) have an active head injury diagnosis. Almost half of these residents (50 people) were classified at category F in 1990, and an additional 13% (14 people) were classified at category G (see Figure 30). Twenty-two percent require a moderate amount of care (C, D and E), and only eighteen percent of head injury residents require light care (A and B). Residents diagnosed with a head injury are under-represented in all of the lighter care categories compared to all other residents.

Figure 31 CLASSIFICATION CATEGORIES - HEAD INJURY VS. OTHER RESIDENTS



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[45] Mortimer, J. A., French, L. R., Hutton, J. T., 1985. Head Injury as a Risk Factor for Alzheimer's Disease, Neurology, 35:264.

[46] Sullivan, P., Pettiti, D., Barbaccia, J., 1987. Head Trauma and Age of Onset of Dementia of the Alzheimer's Type, Journal of the American Medical Association, 257:2289.

[47] Gedye, A., Beattie, B. L., Tuokko, H., Horton, A., Korsarek, E., 1989. Severe Head Injury Hastens Age of Onset of Alzheimer's Disease, Journal of the American Geriatrics Society, 37:970-973.

Age Distribution of Head Injury Residents

The majority (65%) of residents diagnosed with a head injury are under the age of 65. Forty-two percent of the residents in this group (45 people) are younger than 45, 11% are between the ages of 45 and 54, and 11% are between the ages of 55 and 64. Only 17% of head injury residents are between the ages of 65 and 74, and 18% (19 people) are over the age of 75.

Rural - Urban Differences

Most residents with a head injury (77% or 82 people) currently reside in urban facilities. Only 24 residents (23%) with a diagnosis of head injury reside in rural facilities.

Medical Condition

Seven of the residents with a diagnosis of head injury (7%) were comatose at the time of classification, and one (1%) was terminally ill.

Diagnosis of Head Injury and the Classification Indicators

Residents with a diagnosis of head injury have significantly higher care requirements than the rest of the resident population[48], primarily with the activities of daily living. Twenty-four percent of head injured residents require complete feeding, and 14% require tube feeding. Thirty percent require a catheter or have an ostomy. Fifty-seven percent require two people to assist them with transferring, and 70% require total assistance with dressing.

Forty-eight percent of residents with a head injury require intervention for potentially injurious behaviour on at least an hourly basis. This figure is quite high compared to other residents, only 33% of whom require intervention this frequently. There is no statistically significant difference between those residents with a diagnosis of head injury and the rest of the population for the second indicator used to determine the resident's BDL level (ineffective coping) or for urinary incontinence, but a statistically significant difference exists between the two groups for the bowel continence indicator. Fifty-eight percent of the residents with a diagnosis of head injury require management procedures for bowel continence, while only 49% of the rest of the resident population require management procedures.

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[48] Differences are significant ($p<.01$) using a chi^2 test of significance.

Head Injury Diagnosis and Behaviours Requiring Care

The relationship between an active diagnosis of head injury and care staff documentation of behaviours requiring care was tested and found significant for three of the specific behaviours[49]. There is a positive relationship between a diagnosis of head injury and anxious, suicidal and aggressive or angry behaviour.

Communication

A significantly higher proportion of the residents with an active diagnosis of a head injury have difficulty communicating with others than do other residents (77% vs. 54%)[50]. Fifty-nine percent of the residents with this diagnosis have difficulty communicating due to a physical impairment.

Therapeutic Interventions

There are three therapeutic interventions which residents with an active head injury diagnosis require more frequently than do other residents[51]. A significantly higher proportion of the residents with this diagnosis than other residents require gastrostomy feeding (20.8% compared to .8%), nasal or oral suctioning (3.8% for those with a head injury diagnosis compared to .2% for other residents), and tracheostomy care (1.9% compared to .1%).

COMATOSE AND TERMINALLY ILL RESIDENTS

With the increasing focus on admitting residents requiring heavier care and the increases to funding for home care, the levels of care in Alberta's long term care facilities are expected to increase as they have in other jurisdictions. Although comatose and terminally ill residents represent only a small portion of the long term care facility population at present, some care providers have expressed the view that the numbers of such residents and the extent of their care requirements may increase in the future.

Comparison of Classification Categories

Figure 31 compares the relationship between medical condition and classification category. Ninety-one percent of the comatose residents are classified at category F, and the remaining 9% are classified at categories E and G. Seventy-two percent of the terminally ill residents were classified as requiring heavy care (F and G categories). Twenty-one percent of terminally ill residents require moderate amounts of care (categories C, D and E) and only 7% were classified as requiring light care (A and B categories).

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[49] Differences are significant (p<.01) using a chi^2 test of significance.

[50] Differences are significant (p<.01) using a chi^2 test of significance.

[51] Differences are significant (p<.01) using a chi^2 test of significance.

Figure 32 MEDICAL CONDITION BY CLASSIFICATION CATEGORY

MEDICAL CONDITION		CLASSIFICATION CATEGORY A	B	C	D	E	F	G	TOTAL
Comatose	#					1	30	2	33
Terminally Ill	#	4	9	9	9	20	110	19	180

Medical Diagnoses for Comatose Residents

Only .3% (33 people) of the current resident population are comatose. Figure 32 indicates the most common medical diagnoses for this group. Dysphasia or aphasia, cerebrovascular accident, and head injury are the most common diagnoses for comatose residents. Thirty-nine percent of comatose residents are diagnosed with dysphasia or aphasia, 27% are diagnosed with cerebrovascular accident and 21% are diagnosed with a head injury. The average comatose resident has 4.2 diagnoses.

Figure 33 MOST COMMON MEDICAL DIAGNOSES - COMATOSE RESIDENTS (N=33)

MEDICAL DIAGNOSIS	%	#
Dysphasia	39%	13
Cerebrovascular Accident	27%	9
Head Injury	21%	7
Convulsions	12%	4
Hypertension	12%	4
Diabetes Mellitus	12%	4
Urinary Tract Infection	12%	4
Dementia	12%	4
Paraplegia and Quadriplegia	9%	3
Myocardial Infarction	9%	3
Osteoarthritis	9%	3

*Percentages do not add to 100 because residents may have multiple diagnoses.

Medical Diagnoses for Terminally Ill Residents

Terminally ill residents make up 1.4% (180 people) of the long term care facility resident population. Figure 33 indicates the ten most common medical diagnoses for this group. Osteoarthritis, dementia (other than Alzheimer's Disease), diabetes and heart failure are the four most commonly occurring medical diagnoses. Twenty-four percent of terminally ill residents are diagnosed with osteoarthritis, and 22% are diagnosed with dementia. Seventeen percent of terminally ill residents are diagnosed with heart failure and 17% with diabetes. The average terminally ill resident has 4.9 medical diagnoses.

Figure 34 MOST COMMON MEDICAL DIAGNOSES - TERMINALLY ILL RESIDENTS (N=180)

DIAGNOSIS	%	#
Osteoarthritis	24%	44
Dementia	22%	40
Diabetes Mellitus	17%	31
Heart Failure	17%	30
Cerebrovascular Accident	15%	27
C.O.P.D.	14%	26
Hearing Loss	14%	26
Hypertension	14%	26
Alzheimer's Disease	12%	22
Atherosclerosis	12%	21

*Percentages may not add to 100 because residents may have multiple diagnoses.

Rural - Urban Differences

The majority of comatose and terminally ill clients reside in urban facilities: 79% of comatose residents and 74% of terminally ill residents live in urban facilities.

ADDITIONAL EMERGING POPULATIONS

The scope of this project did not provide for an in-depth exploration of groups which have been identified as potential populations for long term care facilities. However, other populations have been identified in the literature as potential candidates for facility-based long term health care. Two such populations for whom epidemiological data is beginning to become available are briefly discussed. These are infants born with Down's syndrome who may be likely to develop Alzheimer's disease in later life, and people with the human immunodeficiency virus or A.I.D.S.

New technology and increased understanding of extrauterine life enables modern practitioners to increase the survival rate of infants born prematurely (less than 26 weeks of gestation). According to estimates[52], 10 babies are born in Alberta every year who, due to premature delivery, will be handicapped. Many of these neonatal survivors will require facility-based care at some point during their life, due to the heavy care requirements of their disabilities.

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[52] Schiff, D., 1990. Trouble Ahead: Decision Making Concerns in Neonatology, The Bioethics Bulletin, University of Alberta, 2(Dec):1.

Research also suggests that almost all infants born with Down's Syndrome will develop Alzheimer's disease in later life[53]. Advances in the technology often required to prolong the life of individuals with Down's Syndrome may result in greater numbers requiring long term care for Alzheimer's symptoms. The number of babies born in Alberta with Down's Syndrome is increasing. In 1979, 36 babies were diagnosed with Down's Syndrome; by 1989 this number had increased to 88[54].

Although the family may be able to provide adequate care for the child or young adult with Down's Syndrome, care requirements during the advanced stages of Alzheimer's disease may mean institutionalization becomes the most appropriate option. Individuals with Down's Syndrome should now be considered a potential client group, particularly if facilities in which this special group of individuals currently receive care are down-sized or closed. The Brassard report, Claiming My Future[55], advocates the goal of eventual closure of all institutions currently operated by Alberta Family and Social Services. The report suggests that these facilities should stop admitting or readmitting residents and should ensure that a minimum of 20% of the residents of each institution be relocated to the community each year. The report also suggests that these institutions be replaced with community-based services. If the 130 residents with Down's Syndrome currently living in Michener Centre (the majority of whom are older than 40 years of age) are relocated to the community, many may require admission to a long term care facility within a short period of time, because, according to Karlinsky, all of these individuals will develop Alzheimer's Disease as they age.

Another potential client population group are people with the human immunodeficiency virus or A.I.D.S. The Federal Centre for AIDS estimates that in 1990 there were '50,000 carriers of the human immunodeficiency virus ... in Canada, and by the year 1992 the number of victims showing symptoms of the fatal disease will jump greatly'[56]. Local estimates indicate that "Edmonton may have 1,500 AIDS patients by the year 2,000"[57]. Many of these people will require health care for secondary or opportunistic infections, and long term care facilities may offer the most appropriate type of care. In addition, research indicates that dementia[58] and other symptoms due to brain deterioration[59] are common in the later stages of the illness. Care requirements during the advanced stages of A.I.D.S. may mean institutionalization in long term care facilities is considered an option for these individuals as well.

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[53] Karlinsky, H., 1986. Alzheimer's Disease in Down's Syndrome: A Review. Journal of the American Geriatrics Society, 34:728-734.

[54] Health Economics and Statistics, Alberta Health Morbidity Files, 1979/80 and 1989/90. Alberta Health.

[55] The Brassard Committee, ND. Claiming My Future, Alberta Family and Social Services.

[56] The Canadian Press, 1990. 'Care givers' facing crisis in AIDS fight, Edmonton Journal, March 19.

[57] Farrell, J. 1990. AIDS cases to burden health care system, Edmonton Journal, March 1.

Other sub-groups identifiable by a combination of social characteristics and health needs may also be distinguished more precisely in the future. Groups of individuals having a particular ethnic or cultural identity including Alberta's aboriginal people may also be emerging long term care populations. It has been suggested that long term care candidates currently described as 'difficult to place' may constitute such a group. Further, more specific studies will be needed to identify which groups are perceived to be emerging long term care populations, and why this is the case. It will be important to identify what services they are currently receiving and/or requesting and to establish responsibility for providing these services.

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[58] Adler, T., 1990. AIDS dementia: Are HIV-positive, asymptomatic people impaired? Scientists differ, American Psychological Association Monitor, 21(2):14.

[59] Scherer, P., 1990. How AIDS Attacks the Brain. American Journal of Nursing, 90(1):44-53.

CONCLUSION

This project was initiated to provide an objective analysis of the characteristics of residents of Alberta's long term care facilities within the context of a Program Planning model. The analysis reveals that while the residents of Alberta's long term care facilities may be described as a "typical" long term care facility population, they are not a homogeneous group. Differences between the characteristics of residents requiring the most and the least amount of care and differences in the characteristics of the frail elderly, cognitively impaired and young handicapped residents highlight the need for additional study. The differences in resident characteristics between rural and urban long term care facilities also require further analysis.

Describing the characteristics of the current and potential residents for long term care facilities provides a basis for confirming needs, identifying developmental priorities, establishing program objectives and evaluating program outcomes. The analysis presented in this paper represents an initial step in this process.

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APPENDIX A

ICD-9-CM DIAGNOSTIC CODES

Blood and Blood Forming Organ Disorders

Anemias	285
Polycythemia	289
Other blood disorders	001

Circulatory Diseases

Aneurysms	442
Angina pectoris	413
Atherosclerosis (e.g. arteriosclerosis)	440
Cardiac dysrhythmias	427
Cardiovascular disease, unspecified (e.g. ASCVD)	429
Chronic ischematic heart disease (e.g. ASHD)	414
Heart failure (e.g. congestive heart disease, acute pulmonary edema)	428
Hemorrhoids	455
Hypertension, essential	401
Hypertensive heart disease	402
Peripheral vascular disease	443
Myocardial infarction, old	412
Pulmonary heart disease, chronic	416
Pulmonary heart disease, acute (e.g. pulmonary embolism and infarction)	415
Varicose veins/stasis ulcer	454
Other circulatory diseases	002

Digestive Disorders

Cholelithiasis	574
Chrohn's disease	555
Chronic liver disease	571
Constipation	564
Diverticula of intestine	562
Dysphagia (e.g. difficulty in swallowing)	787
Esophogeal diseases	530
Gall bladder disorders, other (e.g. cholecystitis)	575
G I ulcers	534
Gastritis	535
Gastroenteritis or colitis (e.g. diarrhea)	558
Hiatus hernia	553
Intestinal malabsorption	579
Intestinal obstruction	560
Kidney infections	590
Liver disorders (e.g. hepatitis)	573
Pancreatic disease	577
Other disorders of digestion and excretion	003

Endocrine and Metabolic Disorders

Adrenal gland disorders (e.g. Cushing's syndrome)	255
Diabetes mellitus	250
Fluid/electrolyte disorders (e.g. dehydration)	276
Gout (e.g. Gouty arthropathy)	274
Malnutrition	263
Obesity	278
Pituitary gland/hypothalamic control disorders	253
Thyroid disorders	246
Other endocrine and metabolic disorders	004

Genitourinary Disorders

Calculus of kidney and ureter	592
Chronic renal failure	585
Genital prolapse	618
Menopausal and post menopausal disorders (e.g. bleeding, vaginitis)	627
Prostate disorders	602
Urinary tract infection	599
Other genitourinary disorders	005

Mental Problems

Alcoholism, chronic	303
Alzheimer's disease	331
Chronic organic brain syndrome	294
Dementia, arteriosclerotic, presenile and senile, multi-infarct	290
Depression	311
Drug dependence	304
Korsakoff's psychosis, alcoholic	291
Mental disorder (non-psychotic) following organic brain damage	310
Mental retardation	319
Neurotic disorders (e.g. anxiety states, phobic disorders, hypochondriasis, obsessive-compulsive disorders)	300
Paranoid states	297
Psychoses, affective (e.g. manic depression)	296
Psychoses, other nonorganic (e.g. conditions provoked by emotional stress/environment)	298
Schizophrenia	295
Senility without psychosis	797
Other mental problems	006

Musculoskeletal Disability

Arthritis, excluding osteoarthrosis	716
Bone infections (e.g. osteomyelitis)	730
Degeneration of intervertebral, cervical, thoracic or lumbar disc	722
Disorders of synovium, tendon and bursa (e.g. bursitis)	727
Fracture, neck of femur (e.g. head of femur, hip)	820
Fracture, other/unspecified parts of femur	821
Fracture, humerus	812
Fracture, radius and ulna	813
Fracture, vertebra	805
Fracture, other	829
Osteoarthritis	715
Osteoporosis	733
Rheumatoid arthritis	714
Spondylosis	721
Traumatic amputation of leg, late effect	905
Other musculoskeletal disorders	007

Neoplasms

Carcinoma of brain	191
Carcinoma of female breast	174
Carcinoma of colon	153
Carcinoma of lung, trachea and bronchus	162
Carcinoma of prostate	185
Carcinoma of skin	173
Carcinoma of stomach	151
Carcinomatosis, generalized cancer	199
Leukemias	208
Other neoplasms	008

Neurological Motor Dysfunction

Amyotrophic lateral sclerosis	335
Aphasia/Dysphasia	784
Cerebral degeneration, other	331
Cerebral palsy	343
Cerebrovascular accident, acute phase	436
Cerebrovascular accident, late effects	438
Cerebrovascular disease, other	437
Convulsions	780
Epilepsy	345
Head injury	854
Hemiplegia	342
Huntington's chorea	333
Multiple sclerosis	340
Occlusion of cerebral arteries (e.g. cerebral thrombosis, embolism, infarction)	434
Paraplegia and quadriplegia	344
Parkinson's disease	332
Peripheral neuropathies	356
Poliomyelitis, late effects	138
Transient cerebral ischemia (e.g.TIA)	435
Other neurological dysfunction	009

Pulmonary Disease

Asthma	493
Bronchitis	490
Chronic sinusitis	473
Chronic obstructive pulmonary disease (COPD)	496
Emphysema	492
Pneumonia	486
Pulmonary tuberculosis	011
Upper-respiratory infection, acute	465
Other pulmonary disease	010

Sensory Disorders

Blindness and low vision	369
Cataract	366
Glaucoma	365
Hearing loss (e.g. deafness)	389
Retinal disorders	362
Other sensory disorders	012

Skin Disorders

Chronic skin ulcer (e.g. decubitus ulcer)	707
Dermatitis/Eczema	692
Psoriasis	696
Shingles	053
Other skin disorders	013

APPENDIX B

CLASSIFICATION CATEGORIES - CATEGORY DEFINITION

Seven categories were derived from the interrelationships among ADL, BDL, and incontinence levels of care. Initially, a matrix was formed to display all possible combinations of ADL, BDL, and incontinence levels and the mean resource use (mean weighted nursing time) of patients with each combination of care requirements. By examining the resource weights within cells of the matrix, and combining cells with similar weights and clinical characteristics, seven categories were defined. This grouping procedure reduced the 80 cells in the ADL x BDL x Incontinence matrix to a more manageable number of patient categories. For all of the categories, except Category A, the category definition incorporates several combinations of ADL, BDL, and incontinence levels.

Category A includes patients with low ADL, low BDL, and no to medium incontinence problems. These are patients with little or no functional impairment who require minimal supervision, although they may require a supportive environment to function at their potential levels. Such characteristics are found in patients who are being prepared for discharge to independent living, or who require supervision to prevent deterioration in their condition.

Two clusters of patients form category B: those with a low ADL level and a medium to high BDL level, or those with a medium-low ADL level and a low to medium BDL level. Patients with the highest level of incontinence - incontinence of both bowel and bladder - are excluded. These combinations of ADLs and BDLs require about the same levels of care and are seen, for example, in patients having minor physical handicaps that require restorative rehabilitation, or in patients with mild cognitive impairment that might be associated with early stage Alzheimer's disease or mild mental retardation. Note that higher BDL impairment must be offset by low impairment in ADLs in this category.

Three clusters of patients comprise Category C. As in Category B, the clusters represent different combinations of ADL and BDL levels: the lowest ADL requirements with the highest BDL, medium-low ADL with high BDL, and medium ADL with low or medium BDL levels. As in Category B, there is a trade-off between ADL and BDL deficits. However, for Category C the BDL levels are higher for any given ADL level than they are for Category B. Again, patients with the highest level of incontinence are excluded. This category reflects the progression of ADL/BDL deficits, starting with Category A. Patients in this category might be those with early stage multiple sclerosis who require little physical care, but are emotionally labile, or stroke patients with moderate physical deficits who need emotional support.

Category D, the "swing" category, includes the largest number of combinations of ADLs, BDLs, and CCLs. First, it includes those patients whose combined ADL and BDL levels would have put them in Category A, B, or C, but who have incontinence of both bowel and bladder. In addition, patients with no or only occasional incontinence are included if they have medium-low ADLs and very high BDLs, medium ADLs and high BDLs, or medium-high ADLs and BDLs ranging from low to high. For example, paraplegics requiring retraining for bowel and bladder control might be in Category D, though they would be in Category C after the retraining is completed. Patients with Parkinson's disease or Huntington's Chorea might be found in Category D, depending on the stage of the degenerative process and their adjustment to it.

Category E includes patients representing four different combinations of ADL, BDL, and CCL levels. To be included in this category, patients with lower ADL requirements must have either medium to high continuing care requirements for incontinence, or very high BDL requirements. Patients with medium-low ADLs are in this category only if they have very high BDL requirements and need management or retraining for urinary incontinence. Patients with somewhat higher (medium) ADL and only somewhat lower (high) BDL requirements and bladder management problems are also in this category, while those with no or low incontinence are in the category only if they have very high BDL needs. Patients with even higher ADL requirements (medium-high or high) may be in Category E, whether they require management of urinary incontinence or have no incontinence, if they do not have very high BDL requirements. Patients fitting these descriptions are the very frail confused elderly, the alcoholic with Korsakoff's syndrome, the brain injured patient, or the severely handicapped arthritic or old stroke patient.

Category F includes primarily patients with heavy physical care requirements - those with the highest ADL impairments, who also have some incontinence problems. Without the highest ADLs, a patient could be in Category F if the physical care requirements (ADL and Incontinence) are complicated by behavioral problems. Patients with very high BDLs are not included, however, unless they have lower ADL requirements. Patients found in Category F may be senile or have advanced dementias.

Patients with high ADLs and the severest behavioral problems are in Category G. This category includes only patients with the highest BDL requirements, and medium-high or high ADLs. Those with medium-high ADL requirements also must have some incontinence, though those at the highest ADL level are in Category G even without incontinence problems. These care requirements are found in patients who have advanced neurological diseases such as multiple sclerosis, or dementia severe enough to require two people to provide physical care (dressing, toileting, etc.)

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